

45TH MEETING OF THE DIVISION FOR PLANETARY SCIENCES WITH HISTORICAL ASTRONOMY DIVISION (HAD)

6-11 OCTOBER 2013

DENVER, COLORADO

Scientific sessions will be held at the:

Sheraton Downtown Denver
1550 Court Place
Denver, CO 80202

AAS Paper Sorters

Susan Benechhi
Nancy Chanover
Joshua Colwell
Lori Feaga
Jonathan Fortney
Katherine Kretke
Catherine Neish
David Nesvorny
Scot Rafkin
Vishnu Reddy
Andy Rivkin
John Spencer
Andrew Steffl

Session Numbering Key

100's Monday
200's Tuesday
300's Wednesday
400's Thursday
500's Friday

Sessions are numbered in the Program
Book by day and time.

Changes after 5 September are included
only in the online program materials.

DPS LEADERSHIP	2
EXHIBITORS.....	4
ATTENDEE SERVICES.....	10
SCHEDULE.....	12
MONDAY	23
TUESDAY	42
WEDNESDAY	61
THURSDAY.....	78
FRIDAY	96
AUTHOR INDEX	109

CURRENT DPS OFFICERS

- Rosaly Lopes** CHAIR
- Heidi Hammel** VICE-CHAIR
- Athena Coustenis** SECRETARY
- Andrew Rivkin** TREASURER
- Nick Schneider** EDUCATION AND PUBLIC OUTREACH OFFICER
- Vishnu Reddy** PRESS OFFICER
- Tony Roman** WEBMASTER

CURRENT DPS COMMITTEE MEMBERS

- | | |
|--------------------------|----------------------------|
| Dan Britt | Term Expires October 2013 |
| Dale Cruikshank | Term Expires October 2013 |
| Elizabeth Turtle | Term Expires October 2013 |
| Robert Pappalardo | Term Expires November 2014 |
| Ralph McNutt | Term Expires November 2014 |
| Ross Beyer | Term Expires November 2015 |
| Paul Withers | Term Expires November 2015 |

SPONSORS



**Ball Aerospace
& Technologies Corp.**

LOCKHEED MARTIN



BOEING

NORTHROP GRUMMAN



ELSEVIER



APL

The Johns Hopkins University
APPLIED PHYSICS LABORATORY



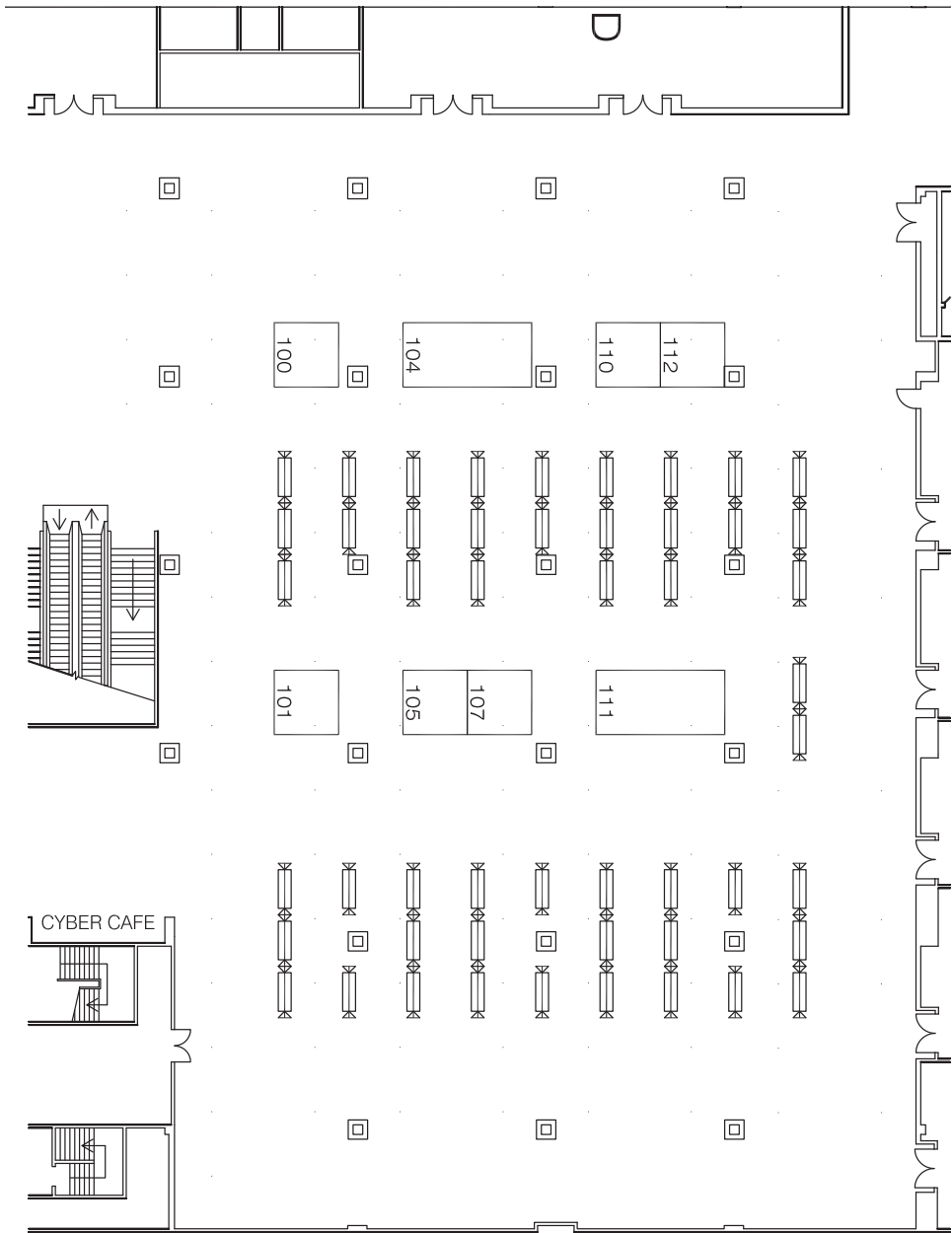
EXHIBITORS

- 100 Cambridge University Press
- 101 Boeing
- 104 NexSci/Kepler
- 105 Johns Hopkins University - Applied Physics Laboratory
- 110 Space Science Institute
- 107 Springer
- 111 Lockheed Martin
- 112 NASA Planetary Data system

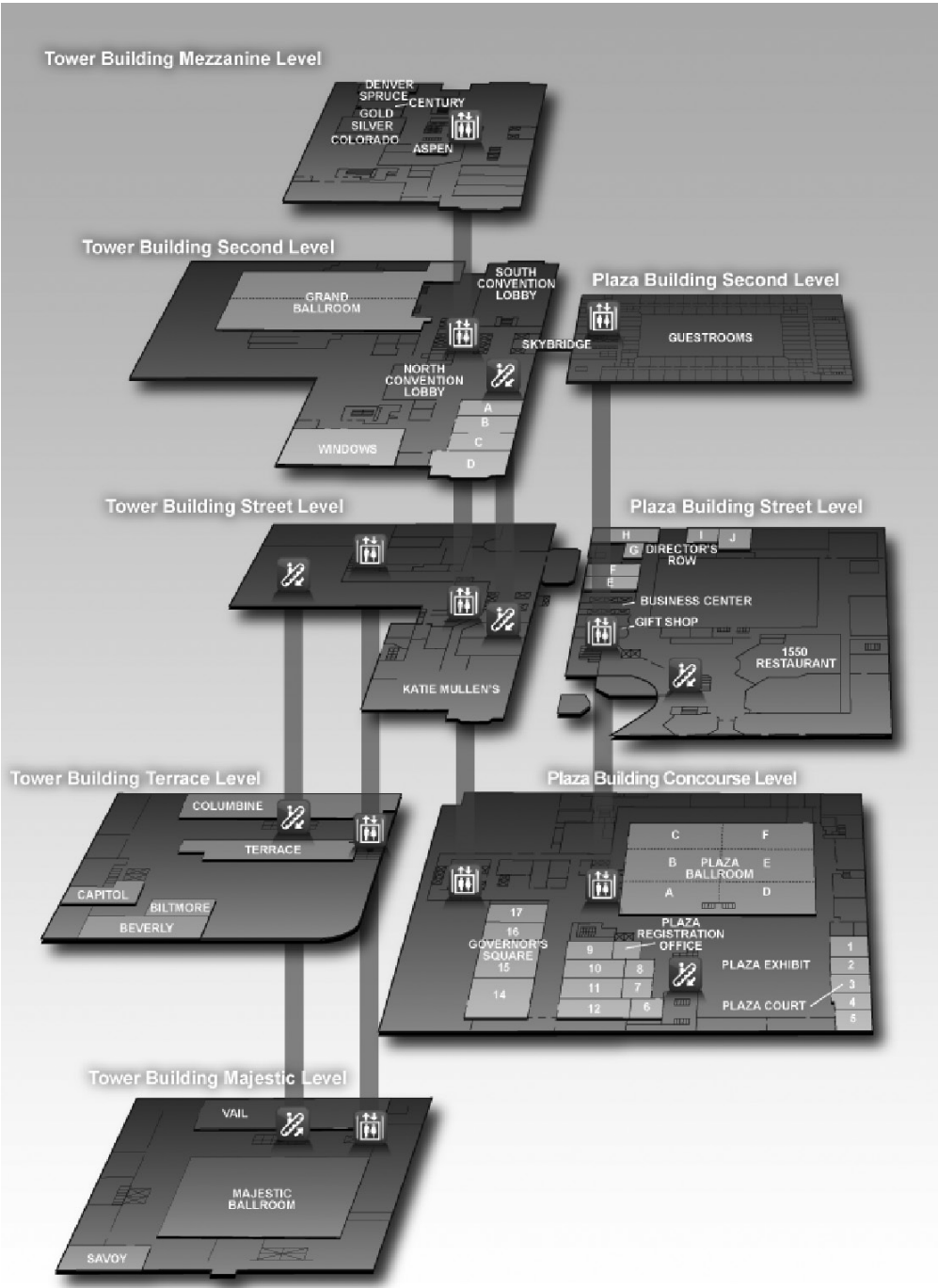
SHARED BOOK EXHIBITORS

- The University of Arizona Press
- Princeton University Press

EXHIBIT HALL

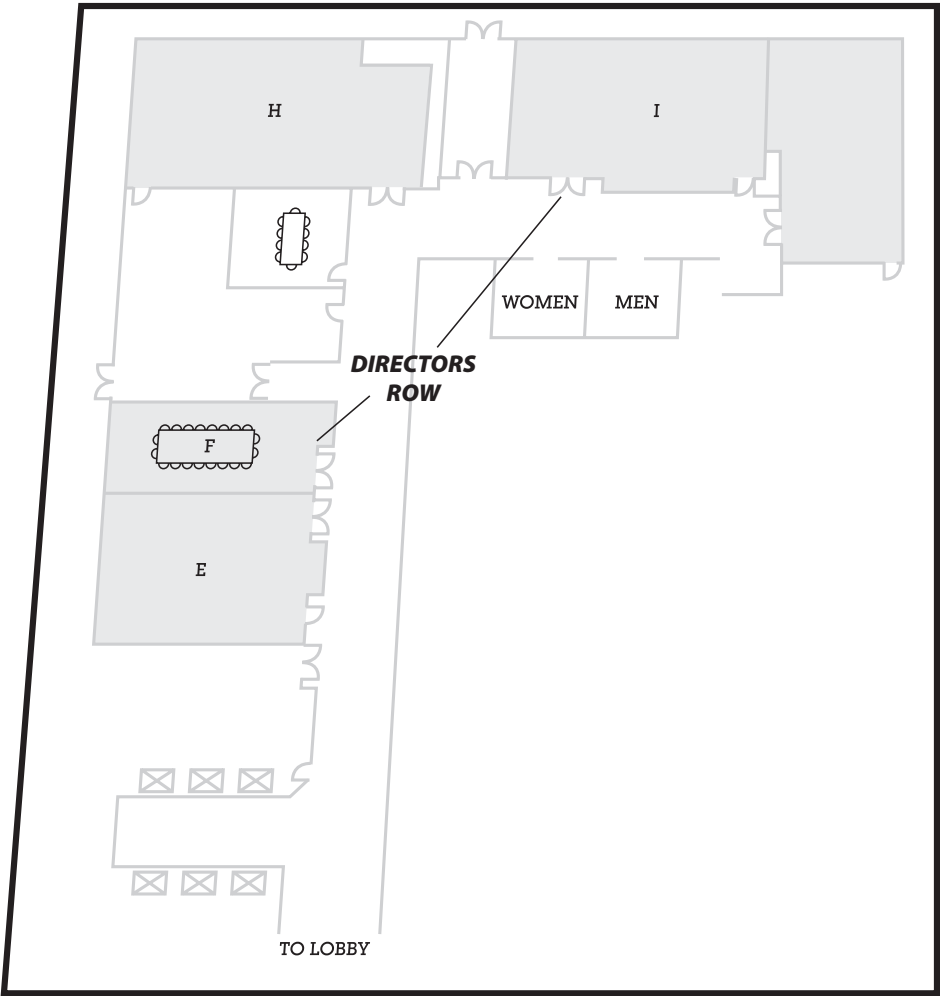


SHERATON DOWNTOWN DENVER



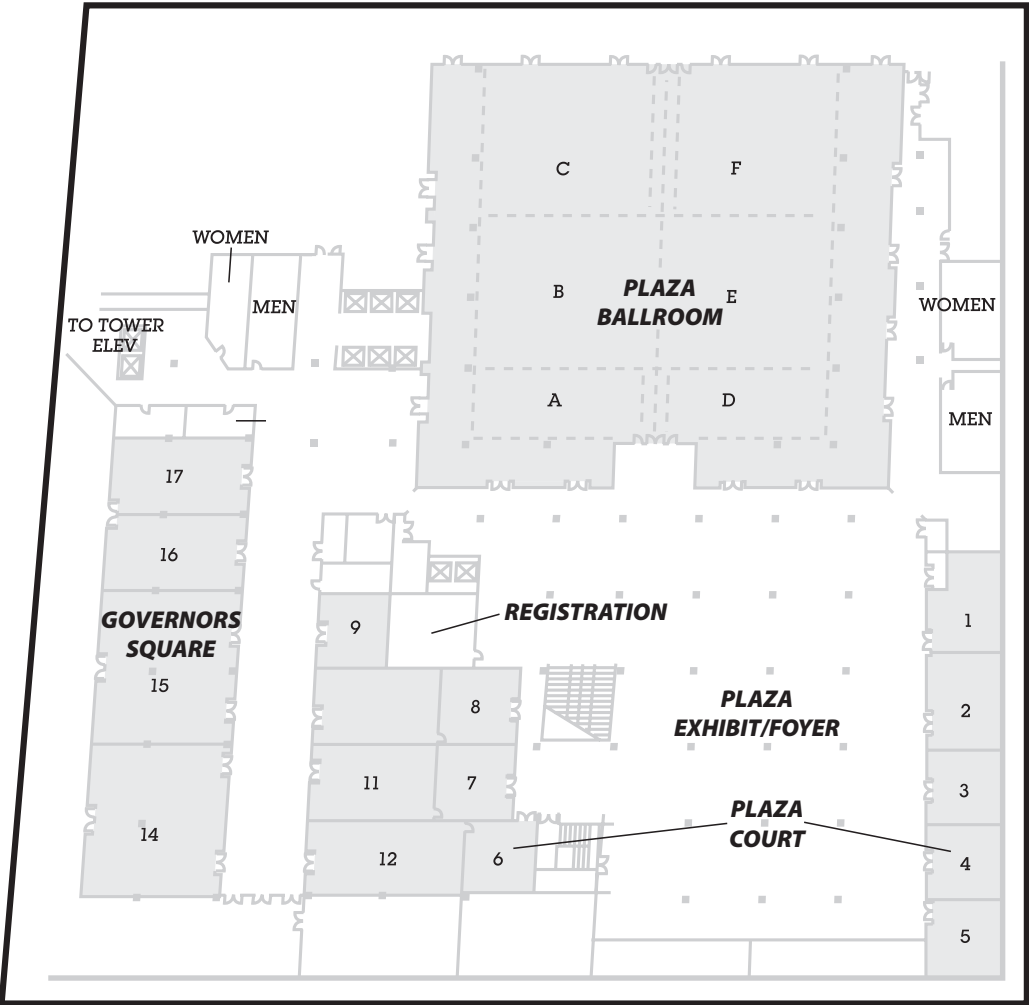
SHERATON DOWNTOWN DENVER

Plaza Building Street Level



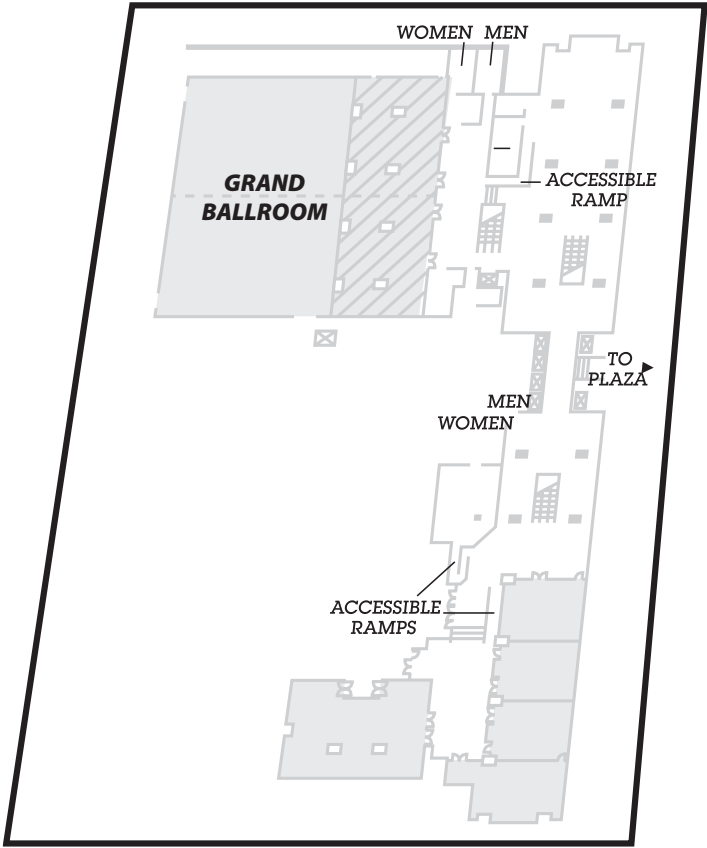
SHERATON DOWNTOWN DENVER

Plaza Building Concourse Level



SHERATON DOWNTOWN DENVER

Tower Building 2nd Level



ATTENDEE SERVICES

For everyone's protection, please wear your badge at all times during the meeting.

Registration

Sunday: 3:00pm-8:00pm, Plaza Registration, Concourse Floor of Plaza Building

Monday: 7:30am-4:00pm, Plaza Registration, Concourse Floor of Plaza Building

Tuesday-Thursday: 8:00am-4:00pm, Plaza Registration, Concourse Floor of Plaza Building

Friday : 8:00am-12:00pm, Plaza Registration, Concourse Floor of Plaza Building

Exhibit Hall

You must have your badge to enter the Exhibit Hall

Monday-Thursday: 9:00am-6:00pm

Please do not leave personal items unattended.

The AAS is not responsible for lost or stolen property.

Posters not removed by closing times will be recycled.

Exhibit Hall Events

Morning Coffee Break

Monday-Friday: 10:00am-10:30am

Evening Poster Session with cash bar

Monday-Thursday: 3:30pm-6:00pm

Speaker Ready Room

Plaza Court 2

Sunday: 3:00pm-5:00pm

Monday-Friday: 7:30am-4:00pm

Cyber Café

Plaza Exhibit Hall

Monday-Thursday: 9:00am-6:00pm

Friday: 9:00am-5:00pm

If there is a line for computers, please limit your time to 15 minutes.

Absolutely no food or drink is permitted in the Cyber Café.

Artists Gallery

Visit the International Association of Astronomical Artists Gallery in Plaza Court 1. The DPS welcomes The Solar System, an exhibit that is part of the Artists' Universe (AU). The AU is a modular show of space art images all painted by members of the IAAA.

Using Your Own Laptop While At The Meeting

- All devices are required to be running the most up-to-date virus and spyware protection.
- No device should be running as a server for off site clients.
- Absolutely no routers can be attached to the network without prior authorization from the AAS IT Staff.
- The network will be monitored throughout the Meeting and the AAS Staff reserves the right to disconnect any device that is causing network problems.

Wireless will be available throughout the entire meeting space although some areas may experience limited connectivity. To access the Internet through the AAS wireless network, users will need to connect to any of the AAS access points and log in with the username and password printed on the back of your badge. Please note that the wireless is not encrypted.

Future DPS Meetings

9-14 November, 2014 in Tucson, AZ

8-13 November, 2015 in National Harbor, MD

16-21 October, 2016 in Pasadena, CA

Saturday, 5 October 2013	
9:00am	Workshop: ExoPAG 8, 9:00am-5:00pm, Director's Row H
Sunday, 6 October 2013	
8:00am	Workshop: Using Astronomy and Planetary Science in K-12, 8:00am-5:00pm, Governor's Square 16
10:00am	Workshop: ExoPAG 8, 8:00am-5:00pm, Director's Row H
2:00pm	Volunteer Orientation, 10:00am-11:00am, Governor's Square 17
2:30pm	Workshop: Planetary Science: Progress with Suborbital Reusable Launch Vehicles (sRLV), 2:00pm-5:00pm, Director's Row I
3:00pm	Workshop: Remote Observations of Rosetta Target Comet 67P, 2:00pm-5:00pm, Director's Row J
4:30pm	Workshop: Negotiation Skills for Planetary Scientists, 2:30pm-4:30pm, Director's Row E
6:30pm	Registration, 3:00pm-8:00pm, Plaza Registration, Concourse Floor of Plaza Building
	Speaker Ready Room, 3:00pm-5:00pm, Plaza Court 2
	Student Reception, 4:30pm-6:30pm, Plaza Ballroom D
	Opening Reception, 6:30pm-8:30pm, Grand Ballroom, Tower Building

Monday, 7 October 2013			
7:15am	Session Chair Breakfast, 7:15am-8:00am, Plaza Court 3		
7:30am	Speaker Ready Room, 7:30am-4:00pm, Plaza Court 2		
	Registration, 7:30am-4:00pm, Plaza Registration, Concourse Floor of Plaza Building		
	DPS Chair-Student Breakfast, 7:30am-8:30am, Governor's Square 16		
8:30am	Oral Sessions: 100-103, 8:30am-10:00am		
	100 Education (8:30am-9:00am)	101 Asteroids 1: NEOs - Visitors and Targets Plaza E	102 Mercury Plaza F
	103 Exoplanets 1: Climate and Habitability (9:00am-10:00am)		
	Plaza A		
	104 Historical Astronomy Division I Special: Invited Talks, 8:30am-10:00am, Governor's Square 17		
9:00am	Exhibits, 9:00am - 6:00pm, Plaza Exhibit Hall		
	Cyber Café, 9:00am-6:00pm, Plaza Exhibit Hall		
	Art Exhibit, 9:00am-6:00pm, Plaza Court 1		
10:00am	Coffee Break, 10:00am-10:30am, Plaza Exhibit Hall		
10:30am	Oral Sessions: 105-107, 10:30am-12:00pm		
	105 Exoplanets 2: Atmospheres Plaza A	106 Asteroids 2: Dynamics and Collisions* Plaza E	107 Moon Plaza F
	108 Historical Astronomy Division II Special: Contributed Talks, 10:30am-12:00pm, Governor's Square 17		
12:00pm	DPS Press Briefing, 12:00pm-1:00pm, Governor's Square 11		
	Workshop: Target NEO 2 Workshop Results, 12:00pm-1:00pm, Plaza F		
	Workshop: NRAO Community Event, 12:00pm-1:30pm, Governor's Square 17		
	Lunch Break, 12:00pm-1:30pm		
1:30pm	Plenary Sessions: 109-111, 1:30pm-3:30pm, Plaza A		
	109 Welcome; Kuiper Prize Lecture: Small is NOT Dull: Unraveling the Complexity of Surface Processes on Asteroids, Comets and Small Satellites, J. Veverka (Cornell Univ.), 1:30pm-2:20pm		
	110 The Chelyabinsk Airburst Event, Mark Boslough (Sandia National Labs), 2:20pm-2:55pm		
	111 End-of-the-World: Using Science to Dispel Public Fear, D. Morrison (NASA Astrobiology Inst), 2:55pm-3:30pm		
3:30pm	Evening Poster Session: 112-118, 3:30pm-6:00pm, Plaza Exhibit Hall		
	Poster Highlights: 112 Asteroids 1: First Served, 113 Exoplanets 1, 114 Mercury, 115 Moon, 116 Historical Astronomy Division, 117 Education, 118 Venus		
7:00pm	Reading of And the Sun Stood Still by the Boulder Ensemble Theater Company, 7:00pm-8:30pm, Plaza E		
7:30pm	119 Sagan Medal Public Talk: Near-Earth Objects: Finding Them Before They Find Us, Don Yeomans (JPL), 7:30pm-8:30pm, Plaza A		
	* Session is 5 minutes longer than the block schedule indicates, to accommodate PhD talks		

Tuesday, 8 October 2013			
7:15am	Session Chair Breakfast, 7:15am-8:00am, Plaza Court 3		
7:30am	Speaker Ready Room, 7:30am-4:00pm, Plaza Court 2		
8:00am	Registration, 8:00am-4:00pm, Plaza Registration, Concourse Floor of Plaza Building		
8:30am	Oral Sessions: 200-202, 8:30am-10:00am		
10:30am	200 Exoplanets 3: Atmospheres, Interiors, and Composition* Plaza A	201 Asteroids 3: Potpourri Plaza E	202 Venus* Plaza F
9:00am	Exhibits, 9:00am - 6:00pm, Plaza Exhibit Hall		
	Cyber Café, 9:00am-6:00pm, Plaza Exhibit Hall		
	Art Exhibit, 9:00am-6:00pm, Plaza Court 1		
10:00am	Coffee Break, 10:00am-10:30am, Plaza Exhibit Hall		
10:30am	203 DPS Members Meeting, 10:30am-12:00pm, Plaza A		
12:00pm	Women in Planetary Science Lunch, 12:00pm-1:30pm, Governor's Square 15		
	Workshop: New Horizons Earth-Based Pluto Observing Campaign, 12:00pm-1:00pm, Plaza E		
	Lunch Break, 12:00pm-1:30pm		
	DPS Press Briefing, 12:00pm-1:00pm, Governor's Square 11		
1:30pm	Oral Sessions: 204-207, 1:30pm-3:30pm		
	204 Exoplanets 4: Planet Finding (1:30pm-2:40pm) 207 Titan 1: From the Ground Up (2:40pm-3:30pm) Plaza A	205 Asteroids 4: Composition* Plaza E	206 Rings* Plaza F
3:30pm	Evening Poster Session: 208-211, 3:30pm-6:00pm, Plaza Exhibit Hall		
	Poster Highlights: 208 Asteroids 2: Second Helping, 209 Exoplanets 2, 210 Rings, 211 Missions and Facilities: Present and Future		
3:45pm	Workshop: IOPW Atmospheres Section, 3:45pm-5:00pm, Plaza E		
7:30pm	212 Agency Night, 7:30pm-9:00pm, Plaza A		
	* Session is 5 minutes longer than the block schedule indicates, to accommodate PhD talks		

Wednesday, 9 October 2013			
7:15am	Session Chair Breakfast, 7:15am-8:00am, Plaza Court 3		
7:30am	Speaker Ready Room, 7:30am-4:00pm, Plaza Court 2		
8:00am	Registration, 8:00am-4:00pm, Plaza Registration, Concourse Floor of Plaza Building		
8:30am	Oral Sessions: 300-302, 8:30am-10:00am		
	300 Exoplanets 5: System Architectures* Plaza A	301 Asteroids 5: Geophysics* Plaza E	302 Titan 2: Ground Down* Plaza F
9:00am	Exhibits, 9:00am - 6:00pm, Plaza Exhibit Hall		
	Cyber Café, 9:00am-6:00pm, Plaza Exhibit Hall		
	Art Exhibit, 9:00am-6:00pm, Plaza Court 1		
10:00am	Coffee Break, 10:00am-10:30am, Plaza Exhibit Hall		
10:30am	Oral Sessions: 303-305, 10:30am-12:00pm		
	303 Pluto 1 Plaza A	304 Asteroids 6: Spin, Size, Shape* Plaza E	305 Titan 3: Air Out Plaza F
12:00pm	Lunch Break, 12:00pm-1:30pm		
	DPS Press Briefing, 12:00pm-1:00pm, Governor's Square 11		
1:30pm	Plenary Sessions: 306-308, 1:30pm-3:30pm, Plaza A		
	306 Sagan Medal (D. Yeomans); Urey Prize Lecture: From Pebbles to Planets, A. Johansen (Lund University), 1:30pm-2:20pm		
	307 Planets Orbiting M Dwarf Stars: The Most Characterizable Terrestrial Exoplanets are also the Most Abundant, P.S. Muirhead (Boston Univ.), 2:20pm-2:55pm		
	308 Titan's Spectacular Volte-Face, C.A. Griffith (Univ. Arizona), 2:55pm-3:30pm		
3:30pm	Evening Poster Session: 309-313, 3:30pm-6:00pm, Plaza Exhibit Hall		
	Poster Highlights: 309 Titan, 310 Pluto, 311 Dust, 312 Jovian Planets, 313 Mars		
6:30pm	DPS Banquet, 6:30pm-9:30pm, Denver Museum of Nature and Science		
	* Session is 5 minutes longer than the block schedule indicates, to accommodate PhD talks		

Thursday, 10 October 2013			
7:15am	Session Chair Breakfast, 7:15am-8:00am, Plaza Court 3		
7:30am	Speaker Ready Room, 7:30am-4:00pm, Plaza Court 2		
8:00am	Registration, 8:00am-4:00pm, Plaza Registration, Concourse Floor of Plaza Building		
8:30am	Oral Sessions: 400-404, 8:30am-10:00am		
	400 Mars 1: Surfaces* Plaza A	401 Asteroids 7: Searches (8:30am-9:00am) 403 Enceladus (9:00am-10:00am) Plaza E	402 Dust (8:30am-9:10am) 404 Pluto 2: Atmosphere* (9:10am-10:05am) Plaza F
9:00am	Exhibits, 9:00am - 6:00pm, Plaza Exhibit Hall		
	Cyber Café, 9:00am-6:00pm, Plaza Exhibit Hall		
	Art Exhibit, 9:00am-6:00pm, Plaza Court 1		
10:00am	Coffee Break, 10:00am-10:30am, Plaza Exhibit Hall		
10:30am	Oral Sessions: 405-407, 10:30am-12:00pm		
	405 Mars 2: Surface and Atmospheric Composition* Plaza A	406 Other Icy and Irregular Satellites* Plaza E	407 Comets 1: Ison and Garradd Plaza F
12:00pm	408 JWST Town Hall: Observations in the Solar System, 12:00pm-1:00pm, Plaza A		
1:00pm	Lunch Break, 1:00pm-1:30pm		
1:30pm	Plenary Sessions: 409-412, 1:30pm-3:30pm, Plaza A		
	409 Masursky Award (R. Greeley); Eberhart Award (R. Kerr), 1:30pm-1:45pm		
	410 Mars Science Laboratory: Findings and Highlights of the First year, S.K. Atreya (Univ. Michigan), 1:45pm-2:20pm		
	411 The Kuiper Belt after 20 years: Past, Present & Future, H. Schlichting (MIT), 2:20pm-2:55pm		
	412 Voyager at the Edge of Interstellar Space, E.C. Stone (Caltech), 2:55pm-3:30pm		
3:30pm	Evening Poster Session: 413-418, 3:30pm-6:00pm, Plaza Exhibit Hall		
	Poster Highlights: 413 Comets, 414 TNOs and Centaurs, 415 Origins, 416 Enceladus, 417 Other Icy Satellites, 418 Galilean Satellites		
5:00pm	Pro-Am Workshop, 5:00pm-10:00pm, Governor's Square 15		
	Art Night, 5:00pm-9:00pm, Denver Art District		
	* Session is 5 minutes longer than the block schedule indicates, to accommodate PhD talks		

Friday, 11 October 2013		
7:15am	Session Chair Breakfast, 7:15am-8:00am, Plaza Court 3	
7:30am	Speaker Ready Room, 7:30am-4:00pm, Plaza Court 2	
8:00am	Registration, 8:00am-12:00pm, Plaza Registration, Concourse Floor of Plaza Building	
8:30am	Oral Sessions: 500-502, 8:30am-10:00am	
	500 Mars 3: Atmosphere* Plaza A	501 Galilean Satellites 1 Plaza E 502 Comets 2: Volatile Activity Plaza F
9:00am	Cyber Café, 9:00am-5:00pm, Plaza Exhibit Hall	
10:00am	Coffee Break, 10:00am-10:30am, Plaza Exhibit Hall	
10:30am	Oral Sessions: 503-507, 10:30am-12:00pm	
	503 Origins 1: Solar System Shuffle and Outer Moons (10:30am-11:20am) 507 TNOs and Centaurs 1: Physical and Surface Properties* (11:20am-12:05pm) Plaza A	504 Galilean Satellites 2 (10:30am-10:50am) 506 Jovian Planets 1: Atmospheric Chemistry and Microphysics* (10:50am-12:05pm) Plaza E 505 Comets 3: Potpourri Plaza F
12:00pm	Lunch Break, 12:00pm-1:30pm	
1:30pm	Oral Sessions: 508-510, 1:30pm-3:00pm	
	508 TNOs and Centaurs 2: Trojans, Albedo, Size Distribution* Plaza A	509 Jovian Planets 2: Atmospheric Dynamics and Saturn's 2010 Storm Plaza E 510 Origins 2: Giants and Pebbles**
3:00pm	Break, 3:00pm-3:30pm	
3:30pm	Oral Sessions: 511-513, 3:30pm-5:00pm	
	511 TNOs and Centaurs 3: Dynamics and Occultations Plaza A	512 Jovian Planets 3: Magnetospheres, Upper Atmospheres, and Interiors Plaza E 513 Origins 3: Disks, Moon, and Terrestrial Planets Plaza F
* Session is 5 minutes longer than the block schedule indicates, to accommodate PhD talks ** Session is 10 minutes longer than the block schedule indicates, to accommodate PhD talks		

A GUIDE TO AAS MEETING ETIQUETTE

AAS meetings are the largest and most logistically complex astronomy meetings in the world. We ask all attendees to work together to enhance the value of the meetings by keeping in mind the following points.

Executive Summary

- Do obey the “golden rule”: Treat others as you would like them to treat you.
- Do silence all cell phones and other electronic devices with audible alerts.
- Do not hog wireless bandwidth; use the AAS wireless service sparingly.
- Do be quiet during presentations; if you use a computer, do so discreetly.
- Do not panic if reporters attend your talk on results under journal embargo.
- Do pick up after yourself by depositing trash in the appropriate receptacles.
- Do not blog or tweet or otherwise post private conversations online.

General Considerations

It is AAS policy that all participants in Society activities will enjoy an environment free from all forms of discrimination, harassment, and retaliation. As a professional society, the AAS is committed to providing an atmosphere that encourages the free expression and exchange of scientific ideas. The AAS is dedicated to the philosophy of equality of opportunity and treatment for all members and other meeting attendees, regardless of gender, race, ethnic origin, religion, age, marital status, sexual orientation, disabilities, or any other reason not related to scientific merit. Harassment, sexual or otherwise, is a form of misconduct that undermines the integrity of Society meetings. Violators will be subject to discipline. (Full AAS anti-harassment policy: http://aas.org/governance/Anti-Harassment_Policy.)

AAS-meeting staff are trained professionals, expert at organizing and conducting scientific meetings. They work with professional contractors who specialize in providing audio-visual, security, and other services, and with professional hotel and convention -center staff as well. Meeting attendees are professional scientists, expert at carrying out scientific research and presenting that research at meetings. Accordingly, please be respectful of all meeting staff and contractors, just as they respect you as an attendee and scientist. Attendees who are notably disrespectful or who act in an unprofessional manner toward meeting staff, contractors, other attendees, or hotel or convention -center staff will be required to leave the meeting.

Please note that all sessions except those marked “private” by the AAS are open to all registered attendees, including scientists, students, and journalists. All are due the same level of professional respect and courtesy.

Mobile Phones & Related Devices

Mobile phones, pagers, and similar electronic devices should be silenced. Before each session begins and before you enter an active session, please silence your cell phone and any other devices that have audible alerts. Switching phones to vibrate rather than ring is not sufficient, as the vibrations can be heard or felt by those nearby.

Do not dial or take a phone call during a session. Please exit the session room before beginning or answering a call. All modern mobile phones have caller-ID and call-back features — please make use of them.

Computers & Internet Service

The AAS provides wireless Internet service throughout each meeting, but we cannot guarantee full coverage in all locations. We provide priority access in the common areas. This means you may experience limited connectivity in the session rooms.

If you do make use of wireless Internet access during a presentation, or even if you are just taking notes on your computer, please keep your activities as quiet as possible so as to minimize distractions to other attendees and the speaker. If you must use a computer during a session, please consider sitting near the back of the room so as not to distract the speaker or session chair. These same guidelines apply to mobile phones, tablets, and other electronic devices.

One of the cost drivers for meeting registration is provision of adequate bandwidth, which — believe it or not — costs tens of thousands of dollars per meeting. Excessive downloading or uploading of files, software updates, streaming video, and other bandwidth-hungry activities (e.g., gaming, exploring virtual worlds) increases the costs for all attendees. The AAS reserves the right to ban excessive users from its meeting network and to use site blocking, port blocking, and traffic shaping to ensure adequate bandwidth for all.

Sessions & Questions

If you are giving a presentation, please be sure you have read the speaker and AV instructions on the AAS website (http://aas.org/meetings/av_information.php). All oral presentations must be uploaded to the internal network in the Speaker Ready Room. Personal laptops and USB member drives will not be permitted for presentations in session rooms. We ask that you upload your presentation at least 24 hours in advance. Be sure to show up at your session on time.

The session chair is in charge of the session. The chair cannot end talk times beyond the common limits of 10 minutes for regular contributions and 15 minutes for PhD talks (including time allotted for Q&A).

When asking questions of speakers, please be professional, courteous, and polite. This is especially important when questioning students presenting their dissertation research.

Be considerate of other people wishing to ask questions. If you have multiple or detailed questions, speak with the presenter after the session.

Journalists & Embargoes

If your presentation covers results that have been, or will be, submitted to Nature or Science or any other journal with a strict embargo policy, be sure you understand how that policy applies to scientific meetings. No journal wishes to hinder communication between scientists. For example, both Science and Nature state explicitly that conference presentations do not violate their embargo policies.

But both journals also state that if your presentation covers work that has been, or will be, submitted to them, you should limit your interaction with reporters to clarifying the specifics of your presentation. As Science puts it, “We ask that you do not expand beyond the content of your talk or give copies of the paper, data, overheads, or slides to reporters.” That does not mean you should be rude if a reporter asks you for such materials or poses a question that you do not want to answer — just explain that your results are under embargo at Science or Nature, and the reporter will understand why you cannot be more forthcoming.

Photography & Video

Many events and presentations at AAS meetings are recorded for posterity by a Society photographer. Some sessions, and all press conferences, are videotaped and eventually posted on the AAS members website as a member benefit. Your attendance at an AAS meeting signifies your agreement to be photographed or videotaped in the course of normal meeting business. Invited and prize lecturers will be asked to sign a form for legal clarity.

If you take pictures during the meeting, please be considerate of others. Do not use a flash when taking pictures during sessions.

Eating, Drinking & Smoking

Because our meetings are so full of great content, it can be hard to find time to eat breakfast or lunch. If you must eat or drink while attending a session, please do so quietly and be sure to deposit your trash properly after the session ends. Additional cleaning services costs the AAS money and increases registration costs.

Some venues have strict policies against eating or drinking in particular areas. Meeting attendees are expected to follow these policies. Attendees may not bring their own alcoholic beverages or drink them at the meeting venue outside of areas or times when they are sold. Obviously, this does not apply to bars, restaurants, or other facilities co-located with our meeting venues.

AAS meetings are strictly non-smoking, consistent with laws in the localities where we hold our conferences. When possible, smoking areas will be clearly identified.

Blogging & Tweeting

If you blog, tweet, or otherwise post near-real-time material from the meeting online, you must follow the guidelines above concerning the use of computers, tablets, mobile phones, and AAS wireless bandwidth.

Please do not publicly report private conversations — only scheduled presentations and public comments are fair game for blogging, tweeting, etc.

Remember that many presentations at AAS meetings concern work that has not yet been peer-reviewed. So think twice before posting a blog entry or tweet that is critical of such work. It is helpful to receive constructive criticism during the Q&A after your talk or while standing next to your poster, but it is hurtful to be raked over the coals online before your session is even over and with no easy way to respond.

New York Times editor Bill Keller said it well. When it comes to meetings among colleagues, he explained, “We need a zone of trust, where people can say what’s on their minds without fear of having an unscripted remark or a partially baked idea zapped into cyberspace. Think of it as common courtesy.”

SESSION TABLE OF CONTENTS

100	Education
101	Asteroids 1: NEOs- Visitors and Targets
102	Mercury
103	Exoplanets 1: Climate and Habitability
104	Historical Astronomy Division: Invited Talks
105	Exoplanets 2: Atmospheres
106	Asteroids 2: Dynamics and Collisions
107	Moon
108	Historical Astronomy Division: Contributed Talks
109	Welcome; Kuiper Prize Lecture: Small is NOT Dull: Unravelling the Complexity of Surface Processes on Asteroids, Comets and Small Satellites, J. Veverka
110	The Chelyabinsk Airburst Event, Mark Boslough (Sandia National Labs)
111	End-of-the-World: Using Science to Dispel Public Fear, D. Morrison (NASA Astrobiology Inst)
112	Asteroids Posters 1: First Served
113	Exoplanets Posters 1
114	Mercury Posters
115	Moon Posters
116	Historical Astronomy Division Posters
117	Education Posters
118	Venus Posters
119	Sagan Medal Public Talk: Near-Earth Objects: Finding Them Before They Find Us, Don Yeomans (JPL)
200	Exoplanets 3: Atmospheres, Interiors, and Composition
201	Asteroids 3: Potpourri
202	Venus
203	DPS Members Meeting
204	Exoplanets 4: Planet Finding
205	Asteroids 4: Composition
206	Rings
207	Titan 1: From the Ground Up
208	Asteroids Posters 2: Second Helping
209	Exoplanets Posters 2
210	Rings Posters
211	Missions and Facilities: Present and Future Posters
212	Agency Night
300	Exoplanets 5: System Architectures
301	Asteroids 5: Geophysics
302	Titan 2: Ground Down
303	Pluto 1
304	Asteroids 6: Spin, Size, Shape
305	Titan 3: Air Out
306	Sagan Medal (D. Yeomans); Urey Prize Lecture: From Pebbles to Planets, A. Johansen (Lund University)
307	Planets Orbiting M Dwarf Stars: The Most Characterizable Terrestrial Exoplanets are also the Most Abundant, P.S. Muirhead (Boston Univ.)

308	Titan's Spectacular Volte-Face, C.A. Griffith (Univ. Arizona)
309	Titan Posters
310	Pluto Posters
311	Dust Posters
312	Jovian Planets Posters
313	Mars Posters
400	Mars 1: Surfaces
401	Asteroids 7: Searches
402	Dust
403	Enceladus
404	Pluto 2: Atmosphere
405	Mars 2: Surface and Atmospheric Composition
406	Other Icy and Irregular Satellites
407	Comets 1: ISON and Garradd
408	JWST Town Hall: Observations in the Solar System
409	Masursky Award (R. Greeley); Eberhart Award (R. Kerr)
410	Mars Science Laboratory: Findings and Highlights of the First year, S.K. Atreya (Univ. Michigan)
411	Voyager at the Edge of Interstellar Space, E.C. Stone (Caltech)
412	The Kuiper Belt after 20 years: Past, Present & Future, H. Schlichting (MIT)
413	Comets Posters
414	TNOs and Centaurs Posters
415	Origins Posters
416	Enceladus Posters
417	Other Icy Satellites Posters
418	Galilean Satellites Posters
500	Mars 3: Atmosphere
501	Galilean Satellites 1
502	Comets 2: Volatile Activity
503	Origins 1: Solar System Shuffle and Outer Moons
504	Galilean Satellites 2
505	Comets 3: Potpourri
506	Jovian Planets 1: Atmospheric Chemistry and Microphysics
507	TNOs and Centaurs 1: Physical and Surface Properties
508	TNOs and Centaurs 2: Trojans, Albedo, Size Distribution
509	Jovian Planets 2: Atmospheric Dynamics and Saturn's 2010 Storm
510	Origins 2: Giants and Pebbles
511	TNOs and Centaurs 3: Dynamics and Occultations
512	Jovian Planets 3: Magnetospheres, Upper Atmospheres, and Interiors
513	Origins 3: Disks, Moon, and Terrestrial Planets

100 Education

Oral Session 08:30 AM to 09:00 AM in Plaza ABC

Chair: Louis Mayo

- 100.01 Scientists: Get Involved in Planetary Science Education and Public Outreach! Here's How!**
Sanlyn Buxner¹, Heather Dalton², Stephanie Shipp², Emily CoBabe-Ammann³, Daniella Scalice⁴, Lora Bleacher⁵, Alice Wessen⁶
¹Planetary Science Institute, Tucson, AZ, United States. ²Lunar and Planetary Institute, Houston, TX, United States. ³UCAR Community Programs, Boulder, CO, United States. ⁴NASA Ames Research Center, Moffett Field, CA, United States. ⁵NASA Goddard Space Flight Center, Greenbelt, MD, United States. ⁶Jet Propulsion Laboratory, Pasadena, CA, United States.
- 100.02 CIOC_ISON: Pro-Am Collaboration for Support of NASA Comet ISON Observing Campaign (CIOC) via Social Media**
Padma A. Yanamandra-Fisher¹
¹Space Science Institute, Rancho Cucamonga, CA, United States.
Contributing teams: CIOC_ISON, NASA_CIOC
- 100.03 Engaging Undergraduate Students in Transiting Exoplanet Research with Small Telescopes**
Denise C. Stephens¹, Emily Stoker¹, Clement Gaillard¹, Emily Ranquist¹, Pamela Lara², Kevyn Wright³
¹Brigham Young Univ., Provo, UT, United States. ²Utah Valley University, Orem, UT, United States. ³The Ohio State University, Columbus, OH, United States.

101 Asteroids 1: NEOs- Visitors and Targets

Oral Session 08:30 AM to 10:00 AM in Plaza E

Chair: Nicholas Moskovitz & Jana Pittichova

- 101.01 Results From Ground-based Observations of Asteroid 2012 DA₁₄ During Its Close-Approach to the Earth on February 15th, 2013**
Julia de Leon¹, Noemí Pinilla-Alonso³, José Luis Ortiz², Antonio Cabrera-Lavers⁴, Alvaro Alvarez-Candal^{5,2}, Nicolás Morales², Rene Duffard², Pablo Santos-Sanz², Javier Licandro^{6,7}, A. Pérez-Romero⁴, Vania Lorenzi⁸, Stefan Cikota⁹
¹Universidad de La Laguna, La Laguna, Spain. ²Instituto de Astrofísica de Andalucía, Granada, Granada, Spain. ³Earth and Planetary Sciences Department, University of Tennessee, Knoxville, TN, United States. ⁴GTC Project, La Laguna, Tenerife, Spain. ⁵Observatório Nacional, Rio de Janeiro, Rio de Janeiro, Brazil. ⁶Instituto de Astrofísica de Canarias, La Laguna, Tenerife, Spain. ⁷Departamento de Astrofísica de La Laguna, La Laguna, Tenerife, Spain. ⁸Fundación Galileo Galilei - INAF, Breña Baja, St. Cruz de Tenerife, Spain. ⁹Physics Department, University of Split, Split, Croatia.
- 101.02 Goldstone Radar Images of Near-Earth Asteroid 2012 DA14**
Lance A. Benner¹, Marina Brozovic¹, Jon D. Giorgini¹, Joseph S. Jao¹, Clement G. Lee¹, Michael W. Busch², Martin A. Slade¹
¹Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States. ²National Radio Astronomy Observatory, Socorro, NM, United States.

- 101.03 The Near-Earth Flyby of Asteroid 2012 DA14**
Nicholas Moskovitz¹, Thomas Endicott², Tim Lister³, Bill Ryan⁴, Eileen Ryan⁴, Mark Willman⁵, Carl Hergenrother⁶, Richard Binzel¹, David Polishook¹, Francesca DeMeo¹, Susan Benecchi⁷, Scott Sheppard⁷, Franck Marchis⁸, Thomas Angusteijn⁹, Peter Birthwhistle¹⁰, Arie Verveer¹¹, Amanda Gulbis¹², Takahiro Nagayama¹³, Alan Gilmore¹⁴, Pam Kilmartin¹⁴
¹MIT, Cambridge, MA, United States. ²UMass Boston, Boston, MA, United States. ³LCOGT, Santa Barbara, CA, United States. ⁴NM Tech, Socorro, NM, United States. ⁵University of Hawaii, Hilo, HI, United States. ⁶University of Arizona, Tucson, AZ, United States. ⁷Carnegie DTM, Washington, DC, United States. ⁸SETI, Mountain View, CA, United States. ⁹Nordic Optical Telescope, La Palma, Spain. ¹⁰Great Shefford Observatory, West Berkshire, United Kingdom. ¹¹Perth Observatory, Perth, WA, Australia. ¹²SALT, Sutherland, South Africa. ¹³Nagoya University, Nagoya, Japan. ¹⁴University of Canterbury, Christchurch, New Zealand.
- 101.04 Binary Near-Earth Asteroid (285263) 1998 QE2: Goldstone and Arecibo Radar Imaging and Lightcurve Observations**
Alessandra Springmann¹, Marina Brozović², Petr Pravec³, Patrick A. Taylor¹, Ellen S. Howell¹, Michael C. Nolan¹, Lance A. M. Benner², Michael W. Busch^{4,5}, Jon D. Giorgini², Christopher Magri⁶, Jean-Luc Margot⁷, Shantanu P. Naidu⁷, Michael K. Shepard⁸, Sean E. Marshall⁹, Mariah C. Law^{1,10}, Adrián Galád^{3,11}, Jozef Világi¹¹, Bruce L. Gary¹², Michael D. Hicks², Kevin Hills¹³, Don P. Pray¹⁴, Alberto Q. Vodniza¹⁵
¹Arecibo Observatory, Arecibo, Puerto Rico, United States. ²Jet Propulsion Laboratory, Pasadena, CA, United States. ³Academy of Sciences of Czech Republic, Ondřejov, Czech Republic. ⁴SETI Institute, Mountain View, CA, United States. ⁵National Radio Astronomy Observatory, Socorro, NM, United States. ⁶University of Maine at Farmington, Farmington, ME, United States. ⁷University of California Los Angeles, Los Angeles, CA, United States. ⁸Bloomsburg University, Bloomsburg, PA, United States. ⁹Department of Astronomy, Cornell University, Ithaca, NY, United States. ¹⁰Embry-Riddle Aeronautical University, Daytona Beach, FL, United States. ¹¹Modra Observatory, Bratislava, Slovakia. ¹²Hereford Astronomical Observatory, Hereford, AZ, United States. ¹³Riverland Dingo Observatory, Moorook, SA, Australia. ¹⁴Surgarloaf Mountain Observatory, South Deerfield, MA, United States. ¹⁵Universidad de Nariño, Nariño, Colombia.
- 101.05 Goldstone/VLA Radar Observations of Near-Earth Asteroid 4179 Toutatis in 2012**
Michael W. Busch¹, Marina Brozović², Lance Benner², Jon D. Giorgini², Yu Takahashi^{2,3}, Daniel J. Scheeres³
¹SETI/NRAO, Mountain View, CA, United States. ²JPL, Pasadena, CA, United States. ³U. Colorado Boulder, Boulder, CO, United States.
- 101.06 Physical Characterization of Deep Impact Flyby Target (163249) 2002 GT**
Jana Pittichova¹, Steven R. Chesley¹, Michael D. Hicks¹, Ellen S. Howell², William J. Merline³, Nicholas A. Moskovitz⁴, Keith S. Noll⁵, Petr Pravec⁶, Patrick A. Taylor², Faith Vilas⁷
¹Jet Propulsion Laboratory, Pasadena, CA, United States. ²Arecibo Observatory, Arecibo, Puerto Rico, United States. ³Southwest Research Institute, San Antonio, TX, United States. ⁴Massachusetts Institute of Technology, Cambridge, MA, United States. ⁵Goddard Space Flight Center, Greenbelt, MD, United States. ⁶Ondřejov Observatory, Ondřejov, Czech Republic. ⁷Planetary Science Institute, Tucson, AZ, United States.
Contributing teams: 2002 GT Observing Team
- 101.07 Temporally-Resolved UV/VIS Reflectance Spectra of Near-Earth Asteroid 163249 2002 GT**
Faith Vilas¹, Amanda Hendrix¹
¹Planetary Science Institute, Tucson, AZ, United States.

- 101.08 2009 BD as a Candidate for an Asteroid Retrieval Mission**
David J. Tholen¹, Marco Micheli¹, James Bauer², Amy Mainzer²
¹Univ. of Hawaii, Honolulu, HI, United States. ²Jet Propulsion Laboratory, Pasadena, CA, United States.
- 101.09 Goldstone radar imaging and shape modeling of near-Earth Asteroid (214869) 2007 PA8**
Marina Brozovic¹, Lance Benner¹, Michael Busch², Jon Giorgini¹, Chris Magri³
¹Jet Propulsion Laboratory/Caltech, Pasadena, CA, United States. ²NRAO, Socorro, NM, United States. ³University of Maine at Farmington, Farmington, ME, United States.

102 Mercury

Oral Session 08:30 AM to 10:00 AM in Plaza F

Chair: Matthew Burger & Aimee Merkel

- 102.01 On Mercury's entrapment into the 3:2 spin-orbit resonance**
Benoit Noyelles¹, Julien Frouard², Valeri Makarov³, Michael Efroimsky³
¹University of Namur, Namur, Belgium. ²UNESP, Rio Claro, SP, Brazil. ³US Naval Observatory, Washington, DC, United States.
- 102.02 How core-mantle pressure coupling ensures determination of Mercury's interior structure**
Stanton J. Peale¹, Jean-Luc Margot², Steven A. Hauck³, Sean C. Solomon⁴
¹UC, Santa Barbara, Santa Barbara, CA, United States. ²UC, Los Angeles, Los Angeles, CA, United States. ³Case Western University, Cleveland, OH, United States. ⁴Lamont-Doherty Earth Observatory, New York, NY, United States.
Contributing teams: MESSENGER Science Team, MESSENGER Engineering Team, MESSENGER management team
- 102.03 Global resurfacing of Mercury 4.0–4.1 billion years ago by heavy bombardment and volcanism**
Simone Marchi^{1,2}, Clark R. Chapman², Caleb I. Fassett³, James W. Head⁴, William F. Bottke², Robert G. Strom⁵
¹NASA Lunar Science Institute, Boulder, CO, United States. ²Southwest Research Institute, Boulder, CO, United States. ³Mount Holyoke College, South Hadley, MA, United States. ⁴Brown University, Providence, RI, United States. ⁵University of Arizona, Tucson, AZ, United States.
- 102.04 A Modeling Investigation of the Observed Differences Between Secondary Crater Fields on the Moon and Mercury**
James E. Richardson¹
¹Purdue University, West Lafayette, IN, United States.
- 102.05 The Distribution of Magnesium on Mercury's Surface as Measured by the MESSENGER X-Ray Spectrometer**
Larry R. Nittler¹, Shoshana Z. Weider¹, Richard D. Starr², Ellen J. Crapster-Pregont³, Paul K. Byrne¹, Brett W. Denevi⁴, David T. Blewett⁴, Sean C. Solomon³
¹Carnegie Inst. Of Washington, Washington, DC, United States. ²Catholic University, Washington, DC, United States. ³Columbia University, New York, NY, United States. ⁴The JHU Applied Physics Laboratory, Columbia, MD, United States.
- 102.06 Observations of Mercury's Exosphere from MESSENGER: An Overview**
Aimee Merkel¹, William McClintock¹, Ronald Vervack², Timothy Cassidy¹, Matthew Burger³, Rosemary Killen⁴, Menelaos Sarantos⁵
¹University of Colorado Laboratory for Atmospheric and Space Physics, Boulder, CO, United States. ²Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States. ³Morgan State University, Baltimore, MD, United States. ⁴NASA Goddard Space Flight Center, Greenbelt, MD, United States. ⁵University of Maryland Baltimore, Baltimore, MD, United States.

- 102.07 Sodium Escape in Mercury's Atmosphere: Ground-Based Observations in Support of MESSENGER**
Carl Schmidt¹, Michael Mendillo², Jeffrey Baumgardner², Robert E. Johnson¹
¹University of Virginia, Charlottesville, VA, United States. ²Boston University, Boston, MA, United States.

- 102.08 Planetary ephemeris construction and general relativity tests of PPN-formalism with MESSENGER radioscience data**
Ashok Kumar Verma^{1,2}, Agnes Fienga^{3,4}, Jacques Laskar⁴, Herve Manche⁴, Mickael Gastineau⁴
¹CNES, Toulouse, France. ²Observatoire de Besançon, UTINAM-CNRS UMR⁶²¹³, Besançon, France. ³Observatoire de la Côte d'Azur, GeoAzur-CNRS UMR⁷³²⁹, Valbonne, France. ⁴Astronomie et Systèmes Dynamiques, IMCCE-CNRS UMR⁸⁰²⁸, Paris, France.

103 Exoplanets 1: Climate and Habitability

Oral Session 09:00 AM to 10:00 AM in Plaza ABC

Chair: Tyler Robinson & Kevin Stevenson

- 103.01 High Stellar FUV/NUV Ratio and Oxygen Contents in the Atmospheres of Potentially Habitable Planets**
Feng Tian^{1,2}
¹Tsinghua University, Beijing, China. ²NAOC, Beijing, China.
Contributing teams: MUSCLE
- 103.02 Comparison of model spectra of the first detected exoplanets in the HZ**
Lisa Kaltenegger^{1,2}, Sarah Rugheimer², Dimitar Sasselov²
¹MPIA, Heidelberg, Germany. ²CfA, Cambridge, MA, United States.
- 103.03 Effects of Exoplanet Planetesimal Carbon Chemistry on Habitability**
Torrence V. Johnson¹, Olivier Mousis², Jonathan I. Lunine³, Nikku Madhusudhan⁴
¹Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States. ²Institut UTINAM, CNRS/INSU, UMR ⁶²¹³, Université de Franche-Comté, Besançon Cedex, France. ³Center for Radiophysics and Space Research, Cornell University, Ithaca, NY, United States. ⁴Yale Center for Astronomy and Astrophysics, Department of Physics, New Haven, CT, United States.
- 103.03 Effects of Exoplanet Planetesimal Carbon Chemistry on Habitability**
Torrence V. Johnson¹, Olivier Mousis², Jonathan I. Lunine³, Nikku Madhusudhan⁴
¹Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States. ²Institut UTINAM, CNRS/INSU, UMR ⁶²¹³, Université de Franche-Comté, Besançon Cedex, France. ³Center for Radiophysics and Space Research, Cornell University, Ithaca, NY, United States. ⁴Yale Center for Astronomy and Astrophysics, Department of Physics, New Haven, CT, United States.
- 103.04 Climate Hysteresis for Planets Orbiting Stars of Different Spectral Type**
Aomawa Shields^{1,2}, Victoria Meadows^{1,2}, Cecilia Bitz³, Raymond Pierrehumbert⁴, Manoj Joshi⁵, Tyler Robinson^{1,2}
¹Department of Astronomy and Astrobiology Program, University of Washington, Seattle, WA, United States. ²NASA Astrobiology Institute, Seattle, WA, United States. ³Department of Atmospheric Sciences, University of Washington, Seattle, WA, United States. ⁴Department of Geological Sciences, University of Chicago, Chicago, IL, United States. ⁵School of Environmental Sciences, University of East Anglia, Norwich, Norfolk, United Kingdom.
Contributing teams: Virtual Planetary Laboratory
- 103.05 Water Cycling Between Ocean and Mantle: Super-Earths Need Not be Waterworlds**
Nicolas B. Cowan¹, Dorian S. Abbot²
¹Northwestern University, Evanston, IL, United States. ²University of Chicago, Chicago, IL, United States.

103.06 Habitability and Habitable Zone in Multiple Star Systems**Nader Haghighipour**^{1,2}, Tobias Mueller²¹Univ. of Hawaii, Honolulu, HI, United States. ²University of Tuebingen, Tuebingen, Germany.**104 Historical Astronomy Division: Invited Talks****Oral Session 08:30 AM to 10:00 AM in Governor's Square 17****Chair: Jay Pasachoff****104.01 Clyde W. Tombaugh, Discoverer of Pluto: A Personal Retrospective**
David H. Levy¹¹Vail, AZ, United States.**104.02 Gerard Kuiper and the Infrared Detector**
Derek Sears¹¹Planetary Sciences, NASA Ames research Center/BAERI, Mountain View, CA, United States.**104.03 Rocks From Space: A Historical Perspective**
Donald K. Yeomans¹¹JPL, Pasadena, CA, United States.**105 Exoplanets 2: Atmospheres****Oral Session 10:30 AM to 12:00 PM in Plaza ABC****Chair: Mark Marley & Julianne Moses****105.01 Exoplanet transits in X-rays: a new observational window to the exoplanetary atmosphere****Katja Poppenhaeger**^{1,2}, Juergen H. Schmitt², Scott J. Wolk¹¹Smithsonian Astrophysical Observatory, Cambridge, MA, United States. ²Hamburg Observatory, Hamburg, Germany.**105.02 Exploring the atmosphere of HD 189733b at high spectral resolution****Remco de Kok**¹, Jayne Birkby², Matteo Brogi², Ignas Snellen², Simon Albrecht³, Ernst de Mooij⁴, Henriette Schwarz²¹SRON Netherlands Institute for Space Research, Utrecht, Netherlands. ²Leiden Observatory, Leiden, Netherlands. ³MIT, Cambridge, MA, United States. ⁴University of Toronto, Toronto, ON, Canada.**105.03 Clouds in Low-mass, Low-density Planets****Caroline Morley**¹, Jonathan Fortney¹, Mark Marley², Eliza Kempton³, Channon Visscher⁴, Kevin Zahnle²¹University of CA - Santa Cruz, Santa Cruz, CA, United States. ²NASA Ames, Mountain View, CA, United States. ³Grinnell College, Grinnell, IA, United States. ⁴Southwest Research Institute, Boulder, CO, United States.**105.04 A Featureless Transmission Spectrum for the Neptune-Mass Exoplanet GJ 436b**
Heather Knutson¹, Björn Benneke², Drake Deming³, Derek Homeier⁴¹California Institute of Technology, Pasadena, CA, United States. ²Massachusetts Institute of Technology, Cambridge, MA, United States. ³University of Maryland, College Park, MD, United States. ⁴Centre de Recherche Astrophysique, Lyon, France.**105.05 Atmospheric Composition of the ExoNeptune HAT-P-11b****Jonathan D. Fraine**¹, Drake Deming¹, Heather Knutson², Ashlee Wilkins¹, Nikku Madhusudhan³, Kamen Todorov⁴¹University of Maryland, College Park, MD, United States. ²California Institute of Technology, Pasadena, CA, United States. ³Yale Center for Astronomy & Astrophysics, New Haven, CT, United States. ⁴ETH Zürich, Zürich, Switzerland.

- 105.06 Ground-Based Transmission Spectroscopy of Moderately-Irradiated Exoplanets**
Kevin B. Stevenson¹, Jacob Bean¹, Andreas Seifahrt¹, Eliza Kempton²
¹University of Chicago, Chicago, IL, United States. ²Grinnell College, Grinnell, IA, United States.
- 105.07 Exoplanet Transit Spectroscopy of Hot Jupiters Using HST/WFC3**
Avi Mandell¹, Korey Haynes^{2,1}, Evan Sinukoff³, Nikku Madhusudhan⁴, Adam Burrows⁵, Drake Deming^{6,1}
¹NASA GSFC, Greenbelt, MD, United States. ²George Mason University, Fairfax, VA, United States. ³University of Hawaii, Honolulu, HI, United States. ⁴Yale University, New Haven, CT, United States. ⁵Princeton University, Princeton, NJ, United States. ⁶University of Maryland, College Park, MD, United States.
- 105.08 Statistical Significance of Trends in Exoplanetary Atmospheres**
Joseph Harrington¹, M. Oliver Bowman¹, Sarah D. Blumenthal¹, Thomas J. Loredó²
¹University of Central Florida, Orlando, FL, United States. ²Cornell University, Ithaca, NY, United States.
Contributing teams: the UCF Exoplanets Group
- 105.09 A ~0.1 bar Rule for Tropopause Temperature Minima in Thick Atmospheres of Planets and Large Moons**
Tyler D. Robinson¹, David C. Catling¹
¹University of Washington, Seattle, WA, United States.

106 Asteroids 2: Dynamics and Collisions

Oral Session 10:30 AM to 12:05 PM in Plaza E

Chair: Steven Chesley & Kevin Walsh

- 106.01 The non-uniform distribution of the perihelia of near-Earth objects**
Youngmin JeongAhn¹, Renu Malhotra¹
¹The University of Arizona, Tucson, AZ, United States.
- 106.02 A New Population Model of the Orbits and Absolute Magnitudes of Near-Earth Objects**
Mikael Granvik¹, Alessandro Morbidelli², Robert Jedicke³, William F. Bottke⁴, Bryce Bolin³, Edward Beshore⁵, David Vokrouhlicky⁶, David Nesvorný⁴, Patrick Michel²
¹University of Helsinki, Helsinki, Finland. ²Observatoire de la Côte d'Azur, Nice, France. ³University of Hawaii, Honolulu, HI, United States. ⁴Southwest Research Institute, Boulder, CO, United States. ⁵University of Arizona, Tucson, AZ, United States. ⁶Charles University, Prague, Czech Republic.
- 106.03 High precision predictions for near-Earth asteroids: the strange case of (3908) Nyx**
Davide Farnocchia¹, Steven R. Chesley¹, Dave J. Tholen², Marco Micheli²
¹JPL, Caltech, Pasadena, CA, United States. ²IfA, University of Hawaii, Honolulu, HI, United States.
- 106.04 A Genetic Cluster of Martian Trojan Asteroids**
Apostolos Christou¹
¹Armagh Obs., Armagh, North Ireland, UK, United Kingdom.
- 106.05 A new 6-part collisional model of the Main Asteroid Belt.**
Miroslav Brož¹, Helena Cibulková¹
¹Charles University in Prague, Prague, Czech Republic.

- 106.06 The Unusual Evolution of Billion-Year Old Asteroid Families by the Yarkovsky and YORP Effects**
William Bottke¹, David Vokrouhlicky², David Nesvorný¹, Kevin Walsh¹, Marco Delbo³, Dante Lauretta⁴, Harold Connolly⁵
¹Southwest Research Inst., Boulder, CO, United States. ²Charles U., Prague, Czech Republic. ³Nice Obs., Nice, France. ⁴U. Arizona, Tucson, AZ, United States. ⁵Kingsborough Community College of the City University of New York, New York, NY, United States.
Contributing teams: OSIRIS-REx Team
- 106.07 Larger classification allows a new interpretation of the Vesta Family**
Federica Spoto¹, Andrea Milani¹, Alberto Cellino², Zoran Knezević³, Bojan Novaković³
¹University of Pisa, Department of Mathematics, Pisa, Italy. ²INAF–Osservatorio Astronomico di Torino, Pino Torinese, Italy. ³Astronomical Observatory, Belgrade, Serbia.
- 106.08 Yarkovsky-driven Impact Predictions: Apophis and 1950 DA**
Steven R. Chesley¹, Davide Farnocchia¹, Paul W. Chodas¹, Andrea Milani²
¹Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States. ²Univ. Pisa, Pisa, Italy.
- 106.09 Killing the YORP Cycle: A Stochastic and Self-Limiting YORP Effect.**
Desirée Cotto-Figueroa^{1,2}, Thomas S. Statler^{1,3}, Derek C. Richardson⁴, Paolo Tanga⁵
¹Ohio University, Athens, OH, United States. ²Arizona State University, Tempe, AZ, United States. ³National Science Foundation (NSF), Arlington, VA, United States. ⁴University of Maryland, College Park, MD, United States. ⁵Cote d'Azur Observatory, Nice, France.

107 Moon

Oral Session 10:30 AM to 12:00 PM in Plaza F

Chair: Sebastien Besse & Adrienne Dove

- 107.01 Measurements of the Near-Surface Column Structure of Lunar Pyroclastic Deposits**
Lynn M. Carter¹, Rebecca R. Ghent^{2,3}, Joshua L. Bandfield⁴
¹NASA Goddard Space Flight Center, Greenbelt, MD, United States. ²University of Toronto, Toronto, ON, Canada. ³Planetary Science Institute, Tucson, AZ, United States. ⁴Space Science Institute, Boulder, CO, United States.
- 107.02 Tsiolkovskiy Crater Thermophysical Anomaly: Massive Impact Melt or Surface Modification?**
Benjamin Greenhagen¹, Catherine Neish², J. Pierre Williams³, Noah Petro⁴, Paul Hayne¹, Joshua Bandfield⁵
¹Jet Propulsion Laboratory / California Institute of Technology, Pasadena, CA, United States. ²Florida Institute of Technology, Melbourne, FL, United States. ³University of California, Los Angeles, Los Angeles, CA, United States. ⁴NASA Goddard Spaceflight Center, Greenbelt, MD, United States. ⁵University of Washington, Seattle, WA, United States.
- 107.03 Small Scale Cold Traps on Airless Planetary Bodies**
Paul O. Hayne¹, Oded Aharonson², Jean-Pierre Williams³, Matthew A. Siegler¹, Benjamin T. Greenhagen¹, Joshua Bandfield⁴, Ashwin R. Vasavada¹, David A. Paige³
¹Jet Propulsion Laboratory, Pasadena, CA, United States. ²Weizmann Institute of Science, Rehovot, Israel. ³University of California, Los Angeles, CA, United States. ⁴University of Washington, Seattle, WA, United States.
Contributing teams: Diviner Lunar Radiometer Science Team
- 107.04 Measuring the Moon's Morning Dew**
Timothy A. Livengood¹, Gordon Chin², Igor G. Mitrofanov³, William V. Boynton⁴, Roald Z. Sagdeev⁵, Maxim Litvak³, Timothy P. McClanahan², Anton B. Sanin³
¹CRESST/UMD/GSFC, Greenbelt, MD, United States. ²NASA/GSFC, Greenbelt, MD, United States. ³Institute for Space Research, Moscow, Russian Federation. ⁴Lunar and Planetary Laboratory, Tucson, AZ, United States. ⁵University of Md, College Park, MD, United States.

107.05 LRO LAMP: Regional Variations in FUV Lunar Signatures

Amanda Hendrix¹, Kurt Retherford², Randy Gladstone², Dana Hurley³, Paul Feldman⁴, Anthony Egan⁵, David Kaufmann⁵, Paul Miles², Joel Parker⁵, Thomas Greathouse², Michael Davis², Wayne Pryor⁶, Mark Bullock⁵, Kathy Mandt², Alan Stern⁵

¹Planetary Science Institute, Tucson, AZ, United States. ²Southwest Research Institute, San Antonio, TX, United States. ³The Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States. ⁴The Johns Hopkins University, Baltimore, MD, United States. ⁵Southwest Research Institute, Boulder, CO, United States. ⁶Central Arizona College, Coolidge, AZ, United States.

107.06 Constraints on water and oxygen-bearing compounds in the lunar exosphere from ion and neutral observations

Rosemary M. Killen¹, Menelaos Sarantos²

¹NASA Goddard Space Flight Center, Greenbelt, MD, United States. ²University of Maryland, Baltimore, MD, United States.

Contributing teams: DREAM

107.07 Lunar Atmospheric H₂ Detections by the LAMP UV Spectrograph on the Lunar Reconnaissance Orbiter

Jason C. Cook¹, S. Aan Stern¹, Jean-Yves Chaufray², Paul D. Feldman³, G. Randall Gladstone⁴, Kurt D. Retherford⁴

¹Southwest Research Institute, Boulder, CO, United States. ²LATMOS/IPSL, Guyancourt, France. ³Johns Hopkins University, Baltimore, MD, United States. ⁴Southwest Research Institute, San Antonio, TX, United States.

Contributing teams: LAMP Sciece Team

107.08 LRO-Lyman Alpha Mapping Project (LAMP) Observations of the GRAIL Impact Plumes

Kurt D. Retherford¹, Thomas K. Greathouse¹, Dana M. Hurley², G. R. Gladstone¹, Paul O. Hayne³, David A. Paige⁴, Benjamin T. Greenhagen³, Elliot Sefton-Nash⁴, Maria T. Zuber⁵, David E. Smith^{5,11}, Anthony Colaprete⁶, David E. Kaufmann⁷, Paul F. Miles¹, Cesare Grava¹, Henry Throop^{7,8}, Paul D. Feldman⁹, Amanda R. Hendrix⁸, Wayne R. Pryor¹⁰, Timothy J. Stubbs¹¹, David A. Glenar¹², Joel W. Parker⁷, S. A. Stern⁷

¹Southwest Research Inst., San Antonio, TX, United States. ²JHU/APL, Laurel, MD, United States. ³NASA JPL, Pasadena, CA, United States. ⁴UCLA, Los Angeles, CA, United States. ⁵MIT, Boston, MA, United States. ⁶NASA Ames Research Center, Mountain View, CA, United States. ⁷Southwest Research Inst., Boulder, CO, United States. ⁸Planetary Science Inst., Tucson, AZ, United States. ⁹JHU, Baltimore, MD, United States. ¹⁰Central Arizona College, Coolidge, AZ, United States. ¹¹NASA GSFC, Greenbelt, MD, United States. ¹²UMBC, Baltimore, MD, United States.

107.09 Plasma Environment Near Lunar Magnetic Anomalies And Its Effects On Surface Processes

Xu Wang^{1,2}, Calvin Howes^{1,2}, Mihály Horányi^{1,2}, Scott Robertson^{1,2}

¹LASP, Univ. of Colorado, Boulder, CO, United States. ²Colorado Center for Lunar Dust and Atmospheric Studies, Boulder, CO, United States.

108 Historical Astronomy Division: Contributed Talks

Oral Session 10:30 AM to 12:00 PM in Governor's Square 17

Chair: Derek Sears

108.01 Budgeting for Exploration: the History and Political Economy of Planetary Science

Jason Callahan¹

¹The Tauri Group, Washington, DC, United States.

108.02 211-Year-Old Mystery Solved: Creator Of The Word "Asteroid" Revealed

Clifford J. Cunningham¹

¹National Astronomical Research Institute of Thailand, Fort Lauderdale, FL, United States.

- 108.03 The Planetary and Eclipse Oil Paintings of Howard Russell Butler**
Jay M. Pasachoff¹, Roberta J. M. Olson²
¹Williams College, Williamstown, MA, United States. ²New-York Historical Society, New York, NY, United States.
- 108.04 dps45**
Donald B. Campbell¹
¹Cornell University, Ithaca, NY, United States.
- 108.05 Microwave Remote Sensing Of Planetary Atmospheres: The 50 Years From Mariner 2 To NASA-JUNO**
Paul G. Steffes¹
¹Georgia Inst. of Tech., Atlanta, GA, United States.

109 Welcome; Kuiper Prize Lecture: Small is NOT Dull: Unravelling the Complexity of Surface Processes on Asteroids, Comets and Small Satellites, J. Veverka

Plenary Session 01:30 PM to 02:20 PM in Plaza ABC

Chair: Rosaly Lopes

- 109.01 Small is NOT Dull: Unravelling the Complexity of Surface Processes on Asteroids, Comets and Small Satellites**
Joseph Veverka¹
¹Cornell Univ., Ithaca, NY, United States.

110 The Chelyabinsk Airburst Event, Mark Boslough (Sandia National Labs)

Plenary Session 02:20 PM to 02:55 PM in Plaza ABC

Chair: Clark Chapman

- 110.01 The Chelyabinsk Airburst Event**
Mark Boslough¹
¹Sandia National Laboratories, Albuquerque, NM, United States.

111 End-of-the-World: Using Science to Dispel Public Fear, D. Morrison (NASA Astrobiology Inst)

Plenary Session 02:55 PM to 03:30 PM in Plaza ABC

Chair: Clark Chapman

- 111.01 End-of-the-World: Using Science to Dispel Public Fear**
David Morrison¹
¹NASA Astrobiology Inst., Mountain View, CA, United States.

112 Asteroids Posters 1: First Served

Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall

Chair: Vishnu Reddy

- 112.01 Modal mineralogy of VESTA: 1."Ground truth" measurements**
Francois Poulet¹, Yves Langevin¹
¹Institut d'Astrophysique Spatiale, Orsay cedex, France.
- 112.02 Resolved Photometry of Vesta Reveals Physical Properties of Crater Regolith**
Stefan Schroeder¹, Stefano Mottola¹, Uwe Keller², Carol Raymond³, Chris Russell⁴
¹DLR, Berlin, Germany. ²IGEP, Braunschweig, Germany. ³JPL, Pasadena, CA, United States. ⁴UCLA, Los Angeles, CA, United States.

- 112.03 Space Weathering Evolution on Airless Bodies - Laboratory Simulations with Olivine**
Tomas Kohout^{1,2}, Jan Cuda³, Todd Bradley⁴, Daniel Britt⁴, Jan Filip³, Jiri Tucek³, Ondrej Malina³, Josef Kaslik³, Karolina Siskova³, Gunther Kletetschka², Radek Zboril³
¹Department of Physics, University of Helsinki, Helsinki, Finland. ²Institute of Geology, Academy of Sciences of the Czech Republic, Prague, Czech Republic. ³Regional Centre of Advanced Technologies and Materials, Departments of Physical Chemistry and Experimental Physics, Palacky University Olomouc, Olomouc, Czech Republic. ⁴Department of Physics, University of Central Florida, Orlando, FL, United States.
- 112.04 A Spectroscopic and Mineralogical Study of Multiple Asteroid Systems**
Sean S. Lindsay¹, Joshua P. Emery¹, Franck Marchis², J. Emilio Enriquez^{3,2}, Marcelo Assafin⁴
¹Earth and Planetary Sciences, University of Tennessee, Knoxville, TN, United States. ²Carl Sagan Center, SETI Institute, Mountain View, CA, United States. ³Department of Astrophysics, Radboud university Nijmegen, Nijmegen, Netherlands. ⁴Observatorio do Valongo, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil.
- 112.05 Detailed Laboratory Study of Asteroid Organics**
Kelsey Hargrove¹, Scott Sandford², Humberto Campins¹
¹University of Central Florida, Orlando, FL, United States. ²NASA AMES Research Center, Moffett Field, CA, United States.
- 112.06 New Results on the Surface Gravity of Asteroids and Satellites**
Anthony R. Dobrovolskis¹
¹SETI Institute, Mountain View, CA, United States.
- 112.07 New insights on the main-belt triple asteroid (87) Sylvia**
Franck Marchis^{1,2}, Jerome Berthier², Frederic Vachier², Josef Durech³, Pascal Descamps², Benoit Carry²
¹SETI Institute, Mountain View, CA, United States. ²IMCCE, Paris, France. ³Astronomical Institute, Prague, Czech Republic.
- 112.08 Observations of NEA 1998 QE2 with the SMA and VLA**
Bryan J. Butler¹, Mark A. Gurwell², Arielle Moullet³
¹NRAO, Socorro, NM, United States. ²CfA, Cambridge, MA, United States. ³NRAO, Charlottesville, VA, United States.
- 112.09 Coupled Spin and Orbital Dynamics of Binary Near-Earth Asteroids 2000 DP107 and 1991 VH**
Shantanu Naidu¹, Jean-Luc Margot¹
¹UCLA, Los Angeles, CA, United States.
- 112.10 The Origin of Asteroid 162173 (1999 JU3)**
Christine Comfort¹, Humberto Campins¹, Julia de Leon^{2,3}, Alessandro Morbidelli⁴, Javier Licandro^{2,5}, Julie Gayon-Markt⁴, Marco Delbo⁴, Patrick Michel⁴
¹University of Central Florida, Orlando, FL, United States. ²University of La Laguna, Tenerife, Spain. ³Instituto de Astrofísica de Andalucía, Granada, Spain. ⁴Université de Nice Sophia Antipolis, Nice, France. ⁵Instituto de Astrofísica de Canarias, La Laguna, Spain.
- 112.11 Dynamics and History of Mars Trojans**
Matija Cuk¹, Douglas P. Hamilton²
¹SETI Institute, Mountain View, CA, United States. ²University of Maryland, College Park, MD, United States.
- 112.12 Jovian Trojans: Orbital structures versus the WISE data**
Jakub Rozehnal^{1,2}, Miroslav Brož¹
¹Astronomical Institute, Charles University, V Holesovickach ²Prague ⁸Czech Republic. ²Stefanik Observatory, Strahovska ²⁰⁵Prague ¹Czech Republic.

- 112.13 A Troop of Trojans: Photometry of 24 Jovian Trojan Asteroids**
Linda M. French¹, Robert D. Stephens², Daniel R. Coley², Lawrence H. Wasserman³, Daniel La Rocca¹, Faith Vilas⁴
¹Illinois Wesleyan University, Bloomington, IL, United States. ²Center for Solar System Studies, Rancho Cucamonga, CA, United States. ³Lowell Observatory, Flagstaff, AZ, United States. ⁴Planetary Science Institute, Tucson, AZ, United States.
- 112.14 Accurate orbit propagation of planet-encountering bodies: the case of (99942) Apophis**
Giulio Baù¹, Francesca Guerra², Andrea Chessa², Linda Dimare², Andrea Milani Comparetti¹
¹University of Pisa, Pisa, Italy. ²SpaceDyS, Pisa, Italy.
- 112.15 Shape and Rotation Modeling and Thermophysical Analysis of Near-Earth Asteroid (1917) Cuyo**
Paul R. Weissman¹, Stephen C. Lowry², Agata Rozek², Samuel R. Duddy², Ben Rozitis³, Stephen D. Wolters¹, Colin Snodgrass⁴, Alan Fitzsimmons⁵, Simon Green³, Michael D. Hicks¹
¹JPL, Pasadena, CA, United States. ²University of Kent, Canterbury, United Kingdom. ³The Open University, Milton Keynes, United Kingdom. ⁴Max Planck Institute for Solar System Research, Katlenburg-Lindau, Germany. ⁵Queen's University, Belfast, Belfast, United Kingdom.
- 112.16 Modeling the tangential YORP effect**
Oleksiy Golubov^{1,2}, Daniel J. Scheeres¹, Yuriy N. Krugly²
¹University of Colorado, Boulder, CO, United States. ²Karazin Kharkiv National University, Kharkiv, Ukraine.
- 112.17 A Statistical Analysis of YORP Coefficients**
Jay W. McMahon¹, Daniel Scheeres¹
¹University of Colorado - Boulder, Boulder, CO, United States.
- 112.18 Quantifying Observational Selection Effects in Asteroid Surveys**
Robert Jedicke¹, Bryce Bolin¹, Mikael Granvik², Edward Beshore³
¹University of Hawaii, Honolulu, HI, United States. ²University of Helsinki, Helsinki, Finland. ³University of Arizona, Tucson, AZ, United States.
- 112.19 A sensitive search for NEOs with the Dark Energy Camera**
Lori Allen¹, David Trilling², Brian Burt², Frank Valdes¹, Cesar Fuentes², David James¹, Steve Larson³, Eric Christensen³, Alissa Earle⁵, David Herrera¹, Mike Brown⁶, Tim Axelrod⁴
¹NOAO, Tucson, AZ, United States. ²NAU, Flagstaff, AZ, United States. ³LPL, Tucson, AZ, United States. ⁴LSST, Tucson, AZ, United States. ⁵Siena College, Loudonville, NY, United States. ⁶Caltech, Pasadena, CA, United States.
- 112.20 Applications of MOPS to NEO searches**
Brian Burt¹, David Trilling¹, Lori Allen², Alissa Earle³, César Fuentes¹, Jonathan Myers⁴
¹Northern Arizona University, Flagstaff, AZ, United States. ²NOAO, Tucson, AZ, United States. ³Siena College, Loudonville, NY, United States. ⁴University of Arizona, Tucson, AZ, United States.
- 112.21 Previously Unidentified Objects Found in MPC 'One Night Stands' File**
Jonathan Myers¹, Alon Efrat¹, Timothy Spahr²
¹University of Arizona, Tucson, AZ, United States. ²Smithsonian Astrophysical Observatory, Boston, MA, United States.

112.22 Scientific Goals of Hayabusa-2 LIDAR Experiment

Hiroki Senshu¹, Noriyuki Namiki¹, Takahide Mizuno², Naru Hirata³, Hirotomo Noda⁴, Ryuhei Yamada⁴, Hitoshi Ikeda⁵, Shinsuke Abe⁶, Koji Matsumoto⁴, Shoko Oshigami⁴, Sho Sasaki⁷, Hiroshi Araki⁴, Seiichi Tazawa⁴, Makoto Shizugami⁴, Masanori Kobayashi¹, Koji Wada¹, Yoshiaki Ishihara⁸, Hirdy Miyamoto⁹, Hirohide Demura³, Jun Kimura¹⁰, Fumi Yoshida⁴, Naoyuki Hirata⁹, Makoto Mita²

¹Chiba Institute of Technology, Narashino, Chiba, Japan. ²Institute of Space and Astronautical Science, Sagami-hara, Kanagawa, Japan. ³The University of Aizu, Aizu-Wakamatsu, Fukushima, Japan. ⁴National Astronomical Observatory of Japan, Oshu, Iwate, Japan. ⁵Japan Aerospace Exploration Agency, Tsukuba, Ibaraki, Japan. ⁶Nihon University, Funabashi, Chiba, Japan. ⁷Osaka University, Toyonaka, Osaka, Japan. ⁸National Institute of Advanced Industrial Science and Technology, Tsukuba, Ibaraki, Japan. ⁹The University of Tokyo, Bunkyo-ku, Tokyo, Japan. ¹⁰Tokyo Institute of Technology, Meguro-ku, Tokyo, Japan.

112.23 Ejecta Behavior and Dynamics within the Proposed ISIS Kinetic Impactor Demonstration Mission

Eugene G. Fahnestock¹, Steven R. Chesley¹

¹Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States.

112.24 A Compositional And Geological View Onto The Ejecta Of Small Fresh Impact Craters On Asteroid 4 Vesta

Katrin Stephan¹, Ralf Jaumann^{1,2}, Maria C. De Sanctis³, Frederico Tosi³, Eleonora Ammannito³, Katrin Krohn¹, Francesca Zambon³, Simone Marchi⁴, Ottaviano Rüsch⁵, Klaus-Dieter Matz¹, Frank Preusker¹, Thomas Roatsch¹, Carol A. Raymond⁶, Chris T. Russell⁷

¹DLR, Berlin, Germany. ²FU, Berlin, Germany. ³INAF, Rome, Italy. ⁴NASA Lunar Science Institute, Boulder, CO, United States. ⁵Westfälische Univ. Münster, Münster, Germany. ⁶JPL, Pasadena, CA, United States. ⁷UCLA, Pasadena, CA, United States.

112.25 Near Earth Asteroid Characterization: Challenges and Opportunities

Jose Luis Galache^{1,2}, Charlotte Beeson^{3,2}, Martin Elvis²

¹Minor Planet Center, Cambridge, MA, United States. ²Smithsonian Astrophysical Observatory, Cambridge, MA, United States. ³University of Southampton, Southampton, Hampshire, United Kingdom.

113 Exoplanets Posters 1

Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall

Chair: Jonathan Fortney

113.01 Cold Friends of Hot Jupiters: AO Survey

Henry Ngo¹, Heather A. Knutson¹, Sasha Hinkley¹, Justin R. Crepp², Konstantin Batygin³, Andrew W. Howard⁴, John A. Johnson³, Timothy D. Morton¹, Philip S. Muirhead⁵

¹California Institute of Technology, Pasadena, CA, United States. ²University of Notre Dame, Notre Dame, IN, United States. ³Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, United States. ⁴Institute for Astronomy, University of Hawaii at Manoa, Honolulu, HI, United States. ⁵Institute for Astrophysical Research, Boston University, Boston, MA, United States.

- 113.02 Cold Friends of Hot Jupiters: NIRSPEC Survey**
Danielle Piskorz¹, Heather A. Knutson¹, Philip S. Muirhead², Konstantin Batygin³, Justin R. Crepp⁴, Sasha Hinkley¹, Andrew W. Howard⁵, John A. Johnson³, Timothy D. Morton¹
¹*Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, CA, United States.* ²*Institute for Astrophysical Research, Boston University, Boston, MA, United States.* ³*Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, United States.* ⁴*University of Notre Dame, South Bend, IN, United States.* ⁵*Institute for Astronomy, University of Hawaii at Manoa, Honolulu, HI, United States.*
- 113.02 Cold Friends of Hot Jupiters: NIRSPEC Survey**
Danielle Piskorz¹, Heather A. Knutson¹, Philip S. Muirhead², Konstantin Batygin³, Justin R. Crepp⁴, Sasha Hinkley¹, Andrew W. Howard⁵, John A. Johnson³, Timothy D. Morton¹
¹*Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, CA, United States.* ²*Institute for Astrophysical Research, Boston University, Boston, MA, United States.* ³*Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, United States.* ⁴*University of Notre Dame, South Bend, IN, United States.* ⁵*Institute for Astronomy, University of Hawaii at Manoa, Honolulu, HI, United States.*
- 113.03 A Simple Model for Orbital Resonances with Dissipation and its Application to Multiple-Planet Systems**
Hilke Schlichting¹, Peter Goldreich²
¹*California - Los Angeles, University of, Los Angeles, CA, United States.* ²*Caltech, Pasadena, CA, United States.*
- 113.04 Mass Growth and Evolution of Giant Planets on Resonant Orbits**
Francesco Marzari¹, Gennaro D'Angelo^{2,3}
¹*Univ. of Padova, Padova, PD, Italy, Italy.* ²*NASA Ames Research Center, Moffett Field, CA, United States.* ³*SETI Institute, Mountain View, CA, USA, CA, United States.*
- 113.05 A Stable Configuration for the Upsilon Andromedae Planetary System**
Russell Deitrick¹, Rory Barnes¹, Barbara McArthur², Thomas Quinn¹, G. Fritz Benedict², Adrienne Antonsen¹, Rodrigo Luger¹
¹*University of Washington, Seattle, WA, United States.* ²*University of Texas, Austin, TX, United States.*
- 113.06 Long Term Dynamical Study Of Kepler Circumbinary Planets Systems With One Planet**
Carlos E. Chavez¹, Nikolaos Georgakarakos³, Snezana Prodan⁴, Francisco Betancourt², Mauricio Reyes-Ruiz⁵, Hector Aceves⁵, Eduardo Perez-Tijerina²
¹*Facultad De Ingenieria Mecanica Y Electrica, UANL, SAN NICOLAS DE LOS GARZA, NUEVO LEON, Mexico.* ²*Facultad de Ciencias Físico Matemáticas, SAN NICOLAS DE LOS GARZA, NUEVO LEON, Mexico.* ³*Higher Technological Educational Institute of Central Macedonia, Terma Magnesias, Serres, Greece.* ⁴*Dept. of Physics/CITA University of Toronto, Toronto, ON, Canada.* ⁵*Universidad Nacional Autónoma de México, Instituto de Astronomía de la UNAM, Ensenada, Baja California, Mexico.*
- 113.07 Analyzing the Orbits of Transiting Exoplanets Using Spitzer Secondary Eclipses**
Andrew S. Foster¹, Joseph Harrington^{1,2}, Ryan A. Hardy¹, Patricio Cubillos¹, Matthew R. Hardin¹
¹*University of Central Florida, Orlando, FL, United States.* ²*Max-Planck-Institut für Astronomie, Heidelberg, Germany.*

- 113.08 Spitzer Secondary Eclipses of HAT-P-13b**
Ryan A. Hardy^{1,2}, Joseph Harrington^{1,3}, Matthew R. Hardin^{1,4}, Nikku Madhusudhan⁵, Patricio Cubillos^{1,3}, Jasmina Blečić¹, Gaspar Á. Bakos⁶, Joel D. Hartman⁶
¹University of Central Florida, Orlando, FL, United States. ²University of Colorado, Boulder, CO, United States. ³Max Planck Institute for Astronomy, Heidelberg, Baden-Württemberg, Germany. ⁴Clemson University, Clemson, SC, United States. ⁵Yale University, New Haven, CT, United States. ⁶Princeton University, Princeton, NJ, United States.
- 113.09 Dynamical Measurements of the Interior Structure of Exoplanets**
Juliette Becker¹, Konstantin Batygin²
¹California Institute of Technology, Pasadena, CA, United States. ²Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, United States.
- 113.10 Are terrestrial exoplanets Earth-like, Venus-like, or the remnants of gas- or ice-giants?**
Christophe Sotin¹, Olivier Grasset², Antoine Mocquet²
¹Jet Propulsion Laboratory / Caltech, Pasadena, CA, United States. ²Laboratoire de Planetologie et Geodynamique / Univeristy of Nantes, Nantes, France.
- 113.11 A Search for Transits of Radial Velocity Detected Super-Earths**
Joshua A. Kammer¹, Heather A. Knutson¹, Andrew W. Howard², Gregory P. Laughlin³
¹California Institute of Technology, Pasadena, CA, United States. ²University of Hawaii, Institute of Astronomy, Manoa, HI, United States. ³University of California, Santa Cruz, CA, United States.
- 113.12 Constraining the Magnetic Field of HAT-P-16b via Near-UV Photometry**
Kyle Pearson¹, Jake D. Turner², Thomas A. G. Sagan^{1,2}
¹University of Arizona, Tucson, AZ, United States. ²Lunar and Planetary Laboratory, Tucson, AZ, United States.
- 113.13 Constraining the Magnetic Fields of Transiting Exoplanets through Ground-based Near-UV Observations**
Jake Turner^{1,2}, Brianna M. Smart^{1,3}, Kyle A. Pearson¹, Lauren I. Biddle¹, Ian T. Cates¹, Micheal Berube¹, Robert M. Thompson¹, Carter-Thaxton W. Smith¹, Johanna K. Teske¹, Kevin K. Hardegree-Ullman⁴, Amy N. Robertson¹, Benjamin E. Crawford¹, Robert Zellem¹, Megan N. Nieberding¹, Brandon A. Raphael¹, Ryan Tombleson¹, Kendall L. Cook¹, Shelby Hoglund¹, Ryan A. Hofmann¹, Christen Jones¹, Allison P.M. Towner¹, Lindsay C. Small¹, Amanda M. Walker-LaFollette¹, Brent Sanford¹, Caitlin C. Griffith¹, Thomas A.G. Sagan¹
¹University of Arizona, Tucson, AZ, United States. ²University of Virginia, Charlottesville, VA, United States. ³University of Wisconsin–Madison, Madison, WI, United States. ⁴University of Toledo, Toledo, OH, United States.
- 113.14 Testing a Method of Detecting a Magnetic Field of Transiting Hot-Jupiter CoRoT-1b**
Lauren Biddle¹, Jake Turner², Kyle Pearson¹, Johanna Teske¹
¹The University of Arizona, Tucson, AZ, United States. ²The University of Virginia, Charlottesville, VA, United States.
- 113.16 Debris Disks around Nearby Late-type Stars: Combined Studies with Herschel and HST**
Karl R. Stapelfeldt¹, Geoffrey Bryden², Kate Su³, John Krist², Peter Plavchan⁴
¹NASA Goddard Space Flight Center, Greenbelt, MD, United States. ²JPL/Caltech, Pasadena, CA, United States. ³Univ. of Arizona, Tucson, AZ, United States. ⁴NExScI/Caltech, Pasadena, CA, United States.
- Contributing teams: Herschel SKARPS Project Team**

- 113.17 Just How Earth-like are Extrasolar Super-Earths? Constraints on H+He Envelope Fractions from Kepler's Planet Candidates**
Angie Wolfgang¹, Eric Lopez¹
¹*University of California, Santa Cruz, Santa Cruz, CA, United States.*
Contributing teams: Kepler Team and the SAMSI Bayesian Characterization of Exoplanet Populations Working Group

114 Mercury Posters

Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall

Chair: Larry Nittler

- 114.01 Instrumental modelling of PHEBUS/Bepi-Colombo**
Jean-Yves Chaufray¹, Eric Quemerais¹, Aurelie Reberac¹
¹*LATMOS, Guyancourt, France.*
- 114.02 Kinetic modeling of the sodium distribution in the Hermean surface-bound exosphere**
Valeriy Tenishev¹, Michael R. Combi¹, Xianzhe Jia¹, Martin Rubin², Jim Raines¹
¹*Univ. of Michigan, Ann Arbor, MI, United States.* ²*University of Bern, Bern, Switzerland.*
- 114.03 Mercury's Sodium Exosphere: Up-Close with MESSENGER**
Timothy A. Cassidy¹, Aimee W. Merkel¹, William E. McClintock¹, Matthew H. Burger², Rosemary M. Killen³, Ronald J. Vervack⁴, Menelaos Sarantos⁵
¹*University of Colorado, LASP, Boulder, CO, United States.* ²*Morgan State University/GESTAR, Greenbelt, MD, United States.* ³*NASA GSFC, Greenbelt, MD, United States.* ⁴*Johns Hopkins Applied Physics Laboratory, Laurel, MD, United States.* ⁵*University of Maryland, Baltimore County, Greenbelt, MD, United States.*
- 114.04 MESSENGER Observations of Calcium in Mercury's Exosphere**
Matthew H. Burger¹, Rosemary M. Killen², William E. McClintock³, Aimee W. Merkel³, Ronald J. Vervack⁴, Menelaos Sarantos⁵, Timothy A. Cassidy³
¹*Morgan State University/GESTAR, Baltimore, MD, United States.* ²*NASA Goddard Space Flight Center, Greenbelt, MD, United States.* ³*University of Colorado/LASP, Boulder, CO, United States.* ⁴*Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States.* ⁵*University of Maryland, Baltimore County, Baltimore, MD, United States.*

115 Moon Posters

Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall

Chair: Paul Hayne

- 115.01 Selenodesy from SELENE(KAGUYA) to Future Lunar Missions**
Sho Sasaki¹, Hiroshi Araki², Hideo Hanada², Yoshiaki Ishihara³, Fuyuhiko Kikuchi², Yusuke Kono², Koji Matsumoto², Hirotomo Noda², Sander J. Goossens⁴, Takahiro Iwata⁵, Ryuhei Yamada², Noriyuki Namiki⁶, Qinghui Liu⁷, Hiroo Kunimori⁸, Shoko Oshigami², Tomokatsu Morota⁹
¹*Osaka University, Toyonaka, Osaka, Japan.* ²*National Astronomical Observatory, Oshu, Iwate, Japan.* ³*AIST, Tsukuba, Ibaraki, Japan.* ⁴*NASA-GSFC, Greenbelt, MD, United States.* ⁵*ISAS/JAXA, Sagami-hara, Kanagawa, Japan.* ⁶*Chiba Institute of Technology, Narashino, Chiba, Japan.* ⁷*Shanghai Astronomical Observatory, Shanghai, Shanghai, China.* ⁸*NICT, Koganei, Tokyo, Japan.* ⁹*Nagoya University, Nagoya, Aichi, Japan.*

115.02 Science Highlights from the LRO/LAMP Mission and Future Plans
Thomas K. Greathouse¹, K. D. Retherford¹, G. R. Gladstone¹, S. A. Stern², P. F. Miles¹, A. F. Egan², D. E. Kaufmann², P. D. Feldman³, A. R. Hendrix⁴, D. M. Hurley⁵, W. R. Pryor⁶, J. W. Parker², M. W. Davis¹, J. C. Cook², J. Mukherjee¹, K. E. Mandt¹, M. A. Bullock², M. H. Versteeg¹, P. S. Mokashi¹
¹Southwest Research Institute, San Antonio, TX, United States. ²Southwest Research Institute, Boulder, CO, United States. ³Johns Hopkins University, Baltimore, MD, United States. ⁴Planetary Science Institute, Los Angeles, CA, United States. ⁵Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States. ⁶Central Arizona College, Coolidge, AZ, United States.

115.03 The Far-UV Albedo of the Moon Determined from Dayside LAMP Observations
Mark A. Bullock¹, Kurt D. Retherford², Randall Gladstone², Thomas K. Greathouse², Kathleen E. Mandt³, Amanda R. Hendrix³, Paul D. Feldman⁴, Paul F. Miles², Anthony F. Egan¹
¹Southwest Research Institute, Boulder, CO, United States. ²Southwest Research Institute, San Antonio, TX, United States. ³Planetary Science Institute, Tucson, AZ, United States. ⁴Johns Hopkins University, Baltimore, MD, United States.

115.04 Construction Of A Small Automated Coronagraph For Observations Of The Lunar Na Exosphere
Roy Tucker¹, Thomas H. Morgan², Rosemary M. Killen²
¹Tucker Scientific Instrumentation Services, Tucson, AZ, United States. ²Goddard Space Flight Center, Greenbelt, MD, United States.

115.05 Velocity Scaling of Neutral Gas Generation from Hypervelocity Dust Impact
Andrew Collette¹, Tobin Munsat², Zoltan Sternovsky¹, Mihaly Horanyi¹
¹LASP, University of Colorado, Boulder, CO, United States. ²Physics, University of Colorado, Boulder, CO, United States.

115.06 Effects of Lunar Topography on the Near-Surface Dusty-Plasma Environment
Marcus Piquette^{1,3}, Mihaly Horanyi^{2,3}, Alex Likhanskii⁴
¹Dept. of Astrophysical and Planetary Science, University of Colorado at Boulder, Boulder, CO, United States. ²Dept. of Physics, University of Colorado at Boulder, Boulder, CO, United States. ³Laboratory for Atmospheric and Space Physics, Boulder, CO, United States. ⁴Tech-X Corporation, Boulder, CO, United States.

116 Historical Astronomy Division Posters

Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall

116.01 A Review of Historical Naked-Eye Sungrazing Comets
Matthew M. Knight^{1,2}
¹Lowell Observatory, Flagstaff, AZ, United States. ²JHU-Applied Physics Laboratory, Laurel, MD, United States.

117 Education Posters

Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall

Chair: Padma Yanamandra-Fisher

117.01 A Big Year for Small Bodies
Louis Mayo¹, Kristen Erickson²
¹NASA's GSFC, Greenbelt, MD, United States. ²NASA HQ, Washington DC, DC, United States.

117.02 The Student Spaceflight Experiments Program: Access to the ISS for K-14 Students
Timothy A. Livengood^{1,2}, Jeffrey J. Goldstein¹, Stacy Hamel¹, Jeffrey Manber³, Michael Hulslander⁴
¹National Center for Earth and Space Science Education, Columbia, MD, United States. ²CRESST/UMD/GSFC, Greenbelt, MD, United States. ³Nanoracks, Inc., Alexandria, VA, United States. ⁴National Air and Space Museum, Smithsonian Institution, Washington, DC, United States.

- 117.03 Studying the Jovian System with small telescopes**
Agustin Sanchez-Lavega¹, Teresa del Rio Gaztelurrutia¹, Ricardo Hueso¹
¹Universidad del Pais Vasco, Bilbao, Spain.
- 117.04 PDS and NASA Tournament Laboratory Progress in Engaging Developers to Provide New Access to the Nation's Planetary Data**
Anne C. Raugh¹, Andy LaMora², Kristen Erickson³, Mitch Gordon⁵, Edwin J. Grayzeck⁴, Thomas H. Morgan⁴, Mark Showalter⁵, William Knopf³
¹University of Maryland, College Park, MD, United States. ²TopCoder, Inc., Glastonbury, CT, United States. ³NASA Headquarters, Washington, DC, United States. ⁴Goddard Space Flight Center, Greenbelt, MD, United States. ⁵SETI, Mountain View, CA, United States.
- 117.05 Scientists and Educators Working Together: Everyone Teaches, Everyone Learns**
Larry A. Lebofsky^{1,4}, Nancy R. Lebofsky¹, Donald W. McCarthy¹, Thea L. Canizo², William Schmitt³, Michelle L. Higgins⁴
¹University of Arizona, Tucson, AZ, United States. ²Planetary Science Institute, Tucson, AZ, United States. ³Science Center of Inquiry, Fountain Hills, AZ, United States. ⁴Girl Scouts of Southern Arizona, Tucson, AZ, United States.
- 117.06 DPS Listing of Planetary Science Graduate Programs: A Resource for Students and Advisors**
David R. Klassen¹, Brian Jackson², Nick Schneider³
¹Rowan University, Glassboro, NJ, United States. ²Carnegie Institution of Washington, Washington, DC, United States. ³University of Colorado, Boulder, CO, United States.
- 117.06 DPS Listing of Planetary Science Graduate Programs: A Resource for Students and Advisors**
David R. Klassen¹, Brian Jackson², Nick Schneider³
¹Rowan University, Glassboro, NJ, United States. ²Carnegie Institution of Washington, Washington, DC, United States. ³University of Colorado, Boulder, CO, United States.
- 117.07 Tools You Can Use! E/PO Resources for Scientists and Faculty to Use and Contribute To: EarthSpace and the NASA SMD Scientist Speaker's Bureau**
Sanlyn Buxner^{2,1}, Christine Shupla³, Emily CoBabe-Ammann⁴, Heather Dalton³, Stephanie Shipp³
¹University of Arizona, Tucson, AZ, United States. ²Planetary Science Institute, Tucson, AZ, United States. ³Lunar and Planetary Institute, Houston, TX, United States. ⁴UCAR Community Programs, Boulder, CO, United States.
- 117.08 Educational Opportunities for the 2014 Opposition of Mars**
Edward F. Albin¹
¹Fernbank Science Center, Atlanta, GA, United States.
- 117.09 Make Movies out of Your Dynamical Simulations with OGRE!**
Daniel Tamayo¹, Robert W. Douglas², Heming W. Ge¹, Joseph A. Burns¹
¹Cornell University, Ithaca, NY, United States. ²Science Solved, Chicago, IL, United States.

118 Venus Posters

Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall

Chair: Paul Steffes

- 118.01 Coordinate Transformations of Low Beta Regions in the Nightside Venus Ionosphere**
Hayley Williamson¹, Joseph Grebowsky²
¹Randolph-Macon College, Ashland, VA, United States. ²NASA Goddard Spaceflight Center, Greenbelt, MD, United States.
- 118.02 Characteristics of Ionospheric Magnetic Flux Ropes on Venus**
Elise Steichen^{1,2}, Tess R. McNulty², Karan Molaverdikhani², David Brain², Tielong Zhang³
¹Broomfield High School, Broomfield, CO, United States. ²LASP, CU Boulder, Boulder, CO, United States. ³SRI, Austrian Academy of Sciences, Graz, Austria.

- 118.03 Properties of the V1 layer in the Venus ionosphere using VeRa observations from Venus Express**
Zachary Girazian¹, Paul Withers¹, Kathryn Fallows¹, Andrew Tarrh¹, Martin Pätzold², Silvia Tellmann², Bernd Häusler³
¹Boston University, Boston, MA, United States. ²University of Cologne, Cologne, Germany. ³Bundeswehr University Munich, Munich, Germany.
- 118.04 Waves in the Mesosphere of Venus as seen by the Venus Express Radio Science Experiment VeRa**
Silvia Tellmann¹, Bernd Häusler², David P. Hinson⁴, G. Leonard Tyler⁴, Thomas P. Andert², Michael K. Bird^{1,3}, Takeshi Imamura⁵, Martin Pätzold¹, Stefan Remus⁶
¹Rheinisches Institut für Umweltforschung, Cologne, Germany. ²Institut für Raumfahrttechnik, Universität der Bundeswehr München, Munich, Germany. ³Argelander-Institut für Astronomie, University of Bonn, Bonn, Germany. ⁴Department of Electrical Engineering, Stanford University, Stanford, CA, United States. ⁵Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Sagami-hara, Japan. ⁶ESAC, ESA, Villa France, Spain.
- 118.05 Photochemical Distribution of Venusian Sulfur and Halogen Species**
Chris Parkinson¹, Stephen Bougher¹, Yuk Yung², Amanda Brecht³
¹Univ. of Michigan, Ann Arbor, MI, United States. ²California Institute of Technology, Pasadena, CA, United States. ³NASA Ames Research Center, Planetary Systems Branch, Moffett Field, CA, United States.
- 118.06 Microphysical Model of the Venus clouds between 40km and 80km.**
Kevin McGouldrick¹
¹University of Colorado, Boulder, CO, United States.
- 118.07 Bimodal Distribution of Sulfuric Acid Aerosols in the Atmosphere of Venus**
Peter Gao¹, Xi Zhang^{1,2}, David Crisp³, Charles G. Bardeen⁴, Yuk L. Yung¹
¹California Institute of Technology, Pasadena, CA, United States. ²University of Arizona, Tucson, AZ, United States. ³Jet Propulsion Laboratory, Pasadena, CA, United States. ⁴National Center for Atmospheric Research, Boulder, CO, United States.
- 118.08 Aqueous Chemistry in the Clouds of Venus: A Possible Source for the UV Absorber**
Kevin H. Baines¹, Mona L. Delitsky²
¹Space Science & Engineering Center, University of Wisconsin, Madison, WI, United States. ²California Specialty Engineering, Pasadena, CA, United States.
- 118.09 Laboratory Studies of O₂ Excited States Relevant to the CO₂ Planets**
Konstantinos S. Kalogerakis¹, Oleg Kostko¹, Kate Storey-Fisher¹
¹SRI International, Menlo Park, CA, United States.
- 118.10 Influence of Asteroid and Comet Impacts on Atmospheric Abundances at Venus, Earth, and Mars**
Caitlin Heath^{1,2}, David A. Brain^{1,2}
¹University of Colorado, Boulder, CO, United States. ²LASP, Boulder, CO, United States.
- 118.11 Characterization of a transiting exo-Venus : lessons from the 2012 Transit**
Thomas Widemann¹, Sarah A. Jaeggli², Kevin P. Reardon³, Paolo Tanga⁴, Jay M. Pasachoff⁵, Glenn Schneider⁶
¹Obs. Paris, Meudon, France. ²Montana State University, Bozeman, MT, United States. ³NSO/Sacramento Peak, Tucson, AZ, United States. ⁴Obs. Côte d'Azur, Nice, France. ⁵Williams College, Williamstown, MA, United States. ⁶Steward Obs., Tucson, AZ, United States.

- 118.12 Venus Terminator Temperature Structure: Venus Express SOIR and VTGCM Comparisons**
Stephen W. Bougher¹, Christopher D. Parkinson¹, Rick Schulte⁴, Amanda S. Brecht², Johanna-Laina Fischer⁵, Ann-Carine Vandaele³, Valerie Wilquet³, Arnaud Mahieux³
¹Univ. of Michigan, Ann Arbor, MI, United States. ²NASA Ames, Moffett Field, CA, United States. ³BIRA, Brussels, Belgium. ⁴Santa Clara University, Santa Clara, CA, United States. ⁵University of Pennsylvania, Philadelphia, PA, United States.
- 118.13 Venus' 5577 Å Oxygen Green Line: An Auroral Process?**
Candace L. Gray¹, Nancy Chanover¹, Tom Slanger², Karan Molaverdikhani³, Bernd Häusler⁴, Silvia Tellmann⁵, Kerstin Peter⁶
¹New Mexico State University, Las Cruces, NM, United States. ²SRI International, Menlo Park, CA, United States. ³The Laboratory for Atmospheric and Space Physics, Boulder, CO, United States. ⁴Institut für Raumfahrttechnik, Universität der Bundeswehr, München, Germany. ⁵Rheinisches Institut für Umweltforschung, Universität zu Köln, Cologne, Germany. ⁶Universität der Bundeswehr München, Neubiberg, Germany.

119 Sagan Medal Public Talk: Near-Earth Objects: Finding Them Before They Find Us, Don Yeomans (JPL)

Public Event 07:30 PM to 08:30 PM in Plaza ABC

Chair: Louis Mayo

TUESDAY

200 Exoplanets 3: Atmospheres, Interiors, and Composition

Oral Session 08:30 AM to 10:05 AM in Plaza ABC

Chair: Heather Knutson & Christophe Sotin

- 200.01
- 3.6 and 4.5 micron Full-orbit Phase Curves of the Hot-Saturn HD 149026b**
Nikole Lewis¹, Heather Knutson², Julien de Wit¹, Eric Agol⁶, Adam Burrows⁹, David Charbonneau³, Nicolas Cowan⁷, Drake Deming⁸, Jonathan Fortney⁴, Jonathan Langton¹⁰, Greg Laughlin⁴, Adam Showman⁵, Tiffany Kataria⁵
¹MIT, Cambridge, MA, United States. ²Caltech, Pasadena, CA, United States. ³Harvard University, Cambridge, MA, United States. ⁴UCSC, Santa Cruz, CA, United States. ⁵University of Arizona, Tucson, AZ, United States. ⁶University of Washington, Seattle, WA, United States. ⁷Northwestern University, Evanston, IL, United States. ⁸University of Maryland, College Park, MD, United States. ⁹Princeton University, Princeton, NJ, United States. ¹⁰Principia College, Elmhurst, IL, United States.
- 200.02
- Updating the SPARC/MITgcm to model the atmospheric circulation of super Earths and terrestrial exoplanets**
Tiffany Kataria¹, Adam P. Showman¹, Robert M. Haberle², Mark S. Marley², Jonathan J. Fortney³, Richard S. Freedman^{4,2}
¹University of Arizona, Tucson, AZ, United States. ²NASA Ames Research Center, Mountain View, CA, United States. ³UCSC, Santa Cruz, CA, United States. ⁴SETI Institute, Mountain View, CA, United States.
- 200.03
- Atmospheric Heat Redistribution on Hot Jupiters**
Daniel Perez-Becker¹, Adam P. Showman²
¹University of California, Berkeley, Berkeley, CA, United States. ²University of Arizona, Tucson, AZ, United States.
- 200.04
- Atmospheric Dynamics of Brown Dwarfs and Directly Imaged Giant Planets**
Adam P. Showman¹, Yohai Kaspi²
¹University of Arizona, Tucson, AZ, United States. ²Weizmann Institute of Science, Rehovot, Israel.
- 200.05
- A Novel Diagnosis of Chemical Disequilibrium in Extrasolar Planet and Substellar Object Atmospheres**
Michael R. Line¹, Yuk L. Yung¹
¹California Institute of Technology, Pasadena, CA, United States.
- 200.06
- Constraints on Elemental Abundances in Hot Jupiter Atmospheres and Implications for Their Formation Conditions**
Nikku Madhusudhan¹
¹Yale University, New Haven, CT, United States.
- 200.07
- Characterizing the Demographics of Exoplanet Bulk Compositions**
Leslie Rogers¹
¹California Institute of Technology, Pasadena, CA, United States.
- 200.08
- How Thermal Evolution and Photo-Evaporation Sculpt Kepler's Sub-Neptunes and Super-Earths.**
Eric Lopez¹, Jonathan J. Fortney¹
¹Department of Astronomy & Astrophysics, UC Santa Cruz, Santa Cruz, CA, United States.

TUE

201 Asteroids 3: Potpourri

Oral Session 08:30 AM to 10:00 AM in Plaza E

Chair: Andrew Rivkin & Amanda Mainzer

201.01 Volatiles in the M-class Population: A Lesson from Vesta?

Michael K. Shepard¹, Patrick Taylor², Michael Nolan², Ellen Howell², Alessandra Springmann², Jon Giorgini³, Lance Benner³, Brian Warner⁴, Alan Harris⁴, Robert Stephens⁴, William Merline⁵, Andrew Rivkin⁶, Dan Coley⁷, Beth Clark⁸, Maureen Bell⁸, Christopher Magri⁹

¹Bloomsburg Univ., Bloomsburg, PA, United States. ²Arecibo Observatory, Arecibo, Puerto Rico, United States. ³Jet Propulsion Laboratory, Pasadena, CA, United States. ⁴More Data!, Rancho Cucamonga, CA, United States. ⁵Southwest Research Inst., Boulder, CO, United States. ⁶JHU- Applied Physics Lab, Laurel, MD, United States. ⁷Center for Solar System Studies, Rancho Cucamonga, CA, United States. ⁸Ithaca College, Ithaca, NY, United States. ⁹University of Maine Farmington, Farmington, ME, United States.

201.02 The Water Regime of Dwarf Planet (1) Ceres

Michael Kueppers¹, Laurence O'Rourke¹, Dominique Bockelee-Morvan², Vladimir Zakharov², Seungwon Lee³, Paul A. von Allmen³, Benoit Carry^{1,4}, David Teyssier¹, Anthony Marston¹, Thomas G. Mueller⁵, Jacques Crovisier², Antonella Barucci², Raphael Moreno²

¹ESA/ESAC, Villanueva de la Canada, Madrid, Spain. ²Paris Observatory, Meudon, France. ³Jet Propulsion Laboratory, Pasadena, CA, United States. ⁴Paris Observatory, Paris, France. ⁵MPE, Garching, Germany.

201.03 Thermal and Structural Evolution of Asteroid (4) Vesta

Bjorn Davidsson¹

¹Dept. of Physics and Astronomy, Uppsala, Sweden.

201.04 Constraints on planetesimal formation from asteroid compositions

Pierre Vernazza¹, Brigitte Zanda², Richard Binzel³, Takahiro Hiroi⁴, Francesca DeMeo³, Mirel Birlan⁵, Roger Hewins^{2,6}, Luca Ricci⁷, Pierre Barge¹, Matthew Lockhart³

¹Laboratoire d'Astrophysique de Marseille, Marseille, France. ²Muséum National d'Histoire Naturelle, Paris, France. ³Massachusetts Institute of Technology, Cambridge, MA, United States. ⁴Brown University, Providence, RI, United States. ⁵Observatoire de Paris, Paris, France. ⁶Rutgers University, Piscataway, NJ, United States. ⁷California Institute of Technology, Pasadena, CA, United States.

201.05 Discovery of the Dust Tail of Asteroid (3200) Phaethon

David Jewitt¹, Jing Li¹, Jessica Agarwal²

¹UCLA, Los Angeles, CA, United States. ²Max Planck Institute, Lindau, Germany.

201.06 NEOWISE: Recent Results and Observations of Tiny Near-Earth Objects

Amanda K. Mainzer¹, James Bauer¹, Tommy Grav², Joseph Masiero¹, Carolyn Nugent¹, Roc Cutri³, Edward L. Wright⁴

¹JPL, Pasadena, CA, United States. ²Planetary Science Institute, Tucson, AZ, United States. ³IPAC/Caltech, Pasadena, CA, United States. ⁴UCLA, Los Angeles, CA, United States.

Contributing teams: NEOWISE Team

201.07 New Heating Mechanism of Asteroids in Protoplanetary Disks

Raymond L. Menzel^{2,1}, Wayne G. Roberge^{2,1}

¹Rensselaer Polytechnic Institute, Troy, NY, United States. ²New York Center for Astrobiology, Troy, NY, United States.

201.08 We're Going To Need A Bigger Boat- Software To Thermophysically Model Asteroids Observed By Neowise
Carolyn Nugent¹, Amy Mainzer¹, Mark J. Lysek¹, Joseph Masiero¹, Tommy Grav², James Bauer¹, Roc M. Cutri³, Edward Wright⁴
¹Jet Propulsion Laboratory, Pasadena, CA, United States. ²Planetary Science Institute, Tucson, AZ, United States. ³Infrared Processing and Analysis Center, California Institute of Technology, Pasadena, CA, United States. ⁴UCLA, Los Angeles, CA, United States.

202 Venus

Oral Session 08:30 AM to 10:05 AM in Plaza F

Chair: Kevin Baines & Kevin McGouldrick

- 202.01 Submillimeter spectroscopy of Venus's atmosphere with ALMA: CO, HDO and sulfur species**
Arielle Moullet¹, Raphaël Moreno², Thérèse Encrenaz², Emmanuel Lellouch², Thierry Fouchet²
¹NRAO, Charlottesville, VA, United States. ²LESIA/ Observatoire de Paris, Meudon, France.
- 202.02 First Measurements of ClO in the Venus Mesosphere**
Brad J. Sandor¹, R Todd Clancy¹
¹Space Science Institute, Boulder, CO, United States.
- 202.03 Models for the Centimeter-Wavelength Opacity of Sulfur Dioxide and Carbon Dioxide based on Laboratory Measurements Conducted under Simulated Conditions for the Deep Atmosphere of Venus**
Paul G. Steffes¹, Patrick M. Shahan¹
¹Georgia Inst. of Tech., Atlanta, GA, United States.
- 202.04 Spatially-Resolved Measurements of H₂O, HCl, CO, OCS, SO₂, and cloud opacity in the Venus Near-Infrared Windows**
Giada Arney^{1,2}, Victoria S. Meadows^{1,2}, David Crisp³, Sarah J. Schmidt⁴, Jeremy Bailey⁵, Tyler D. Robinson^{1,2}
¹University of Washington, Seattle, WA, United States. ²Virtual Planetary Laboratory, Seattle, WA, United States. ³Jet Propulsion Laboratory, Pasadena, CA, United States. ⁴Ohio State University, Columbus, OH, United States. ⁵The University of New South Wales, Sydney, NSW, Australia.
- 202.05 Experimental Aerobraking with Venus Express**
Hakan Svedhem¹
¹ESA/ESTEC, Noordwijk, Netherlands.
- 202.06 Oxygen Escape from Venus During High Dynamic Pressure ICMEs**
Tess McEnulty¹, Janet G. Luhmann², David A. Brain¹, Andrei Fedorov³, Lan K. Jian^{4,5}, Chris T. Russell⁶, Tielong Zhang⁷, Chris Möstl², Yoshifumi Futaana⁸, Imke de Pater⁹
¹LASP, CU Boulder, Boulder, CO, United States. ²SSL, UC Berkeley, Berkeley, CA, United States. ³IRAP, Toulouse, Toulouse, France. ⁴Astronomy Department, UMD, College Park, MD, United States. ⁵NASA GSFC, Greenbelt, MD, United States. ⁶IGPP, UCLA, Los Angeles, CA, United States. ⁷SRI, AAS, Graz, Austria. ⁸IRF, Kiruna, Kiruna, Sweden. ⁹EPS Department, UC Berkeley, Berkeley, CA, United States.
- 202.07 High Variability of the Venus Mesosphere and Lower Thermosphere**
Ann C. Vandaele¹, Rachel Drummond¹, Arnaud Mahieux¹, Severine Robert¹, Valerie Wilquet¹
¹Belgian Inst. for Space Aeronomy, Brussels, Belgium.

TUE

- 202.08 Venus Winds From Ultraviolet, Visible and Near Infrared Images From the VIRTIS Instrument on Venus Express**
Ricardo Hueso^{1,2}, Itziar Garate-Lopez¹, Javier Peralta³, Tatyana Bandos¹, Agustín Sánchez-Lavega^{1,2}
¹Universidad del País Vasco, Bilbao, Spain. ²Unidad Asociada Grupo Ciencias Planetarias UPV/EHU-IAA(CSIC), Bilbao, Spain. ³Instituto de Astrofísica de Andalucía, (CSIC), Granada, Spain.
- 202.09 Temperature retrieval at the southern pole of the Venusian atmosphere**
Itziar Garate-Lopez¹, Antonio Garcia-Munoz², Ricardo Hueso¹, Agustín Sánchez-Lavega¹
¹Física Aplicada I, Euskal Herriko Unibertsitatea / Universidad del País Vasco, Bilbao, Spain. ²ESA Fellow, ESA/RSSD, ESTEC, Noordwijk, Netherlands.

203 DPS Members Meeting

Attendee Event 10:30 AM to 12:00 PM in Plaza ABC

Chair: Rosaly Lopes

204 Exoplanets 4: Planet Finding

Oral Session 01:30 PM to 02:40 PM in Plaza ABC

Chair: Jason Barnes & Nikole Lewis

- 204.01 Three New Planetary Systems Orbiting Metal-Poor Thick Disk Stars**
William D. Cochran¹, Michael Endl¹, Erik J. Brugamyer¹, Phillip J. MacQueen¹
¹Univ. of Texas at Austin, Austin, TX, United States.
- 204.02 Precision Near-Infrared Radial Velocities**
Peter Plavchan¹, Guillem Anglada-Escude², Russel White³, Peter Gao¹, Cassy Davison³, Sean Mills⁴, Chas Beichman¹, Carolyn Brinkworth¹, John A. Johnson⁵, Michael Bottom¹, David Ciardi¹, Kent Wallace¹, Bertrand Mennesson¹, Kaspar von Braun⁶, Gautam Vasisht¹, Lisa Prato⁷, Stephen Kane⁸, Angelle Tanner⁹, Bernie Walp¹⁰, Sam Crawford¹
¹Caltech, Pasadena, CA, United States. ²University of Goettingen, Goettingen, Germany. ³Georgia State University, Atlanta, GA, United States. ⁴University of Chicago, Chicago, IL, United States. ⁵Harvard University, Cambridge, MA, United States. ⁶Max Planck Institute for Astronomy, Heidelberg, Germany. ⁷Lowell Observatory, Flagstaff, AZ, United States. ⁸San Francisco State University, San Francisco, CA, United States. ⁹Mississippi State University, Mississippi State, MS, United States. ¹⁰Gemini Observatory, Hilo, HI, United States.
- 204.03 A Survey for Very Short-Period Planets in the Kepler Data**
Brian K. Jackson¹, Christopher C. Stark¹, Elisabeth R. Adams², Michael Endl³, Phil Arras⁴, Alan Boss¹, Drake Deming⁵
¹Carnegie DTM, Washington, DC, United States. ²Planetary Science Institute, Tucson, AZ, United States. ³McDonald Observatory, The University of Texas at Austin, Austin, TX, United States. ⁴Department of Astronomy, University of Virginia, Charlottesville, VA, United States. ⁵Department of Astronomy, University of Maryland at College Park, College Park, MD, United States.
- 204.04 Current State of the Statistics of Exoplanet Occurrence Rates**
William J. Borucki¹, Stephen T. Bryson¹, Michael R. Haas¹, Jon M. Jenkins², Martin D. Still³
¹NASA Ames Research Center, Moffett Field, CA, United States. ²SETI Institute, Mountain View, CA, United States. ³Baeri, Sonoma, CA, United States.
- 204.05 An Analysis and Implications of Kepler's Photometric Uncertainties**
Wesley A. Traub¹
¹Jet Propulsion Laboratory, Pasadena, CA, United States.

204.06 Likely Planet Candidates Identified by Machine Learning Applied to Four Years of Kepler Data

Jon M. Jenkins¹, Sean D. McCauliff², Joseph H. Catanzarite¹, Joseph D. Twicken¹, Todd C. Klaus²

¹SETI Institute, Moffett Field, CA, United States. ²Orbital Sciences Corporation, Moffett Field, CA, United States.

Contributing teams: Kepler SOC, Kepler SO

204.07 Increasing the Sensitivity of the Kepler Legacy Archive to Transiting Planets
Martin D. Still

¹BAERI/NASA Ames Research Center, Moffett Field, CA, United States.

205 Asteroids 4: Composition

Oral Session 01:30 PM to 03:35 PM in Plaza E

Chair: Cristina Thomas & Guy Consolmagno

205.01 A Comprehensive Study of Chelyabinsk Meteorite: Physical, Mineralogical, Spectral Properties and Solar System Orbit

Maria Gritsevich^{1,2}, Tomas Kohout^{4,5}, Viktor Grokhovsky⁶, Grigory Yakovlev⁶, Esko Lyytinen³, Vladimir Vinnikov², Jakub Haloda⁷, Patricie Halodova⁷, Radoslaw Michalik⁸, Antti Penttilä⁴, Karri Muinonen^{1,4}, Jouni Peltoniemi¹, Valery Lupovka⁹, Vasily Dmitriev⁹

¹Finnish Geodetic Institute, Masala, Finland. ²Dorodnitsyn Computing Center, Russian Academy of Science, Moscow, Russian Federation. ³Finnish Fireball Working Group, Helsinki, Finland. ⁴Department of Physics, University of Helsinki, Helsinki, Finland. ⁵Institute of Geology, Academy of Sciences of the Czech Republic, Prague, Czech Republic. ⁶Ural Federal University, Ekaterinburg, Russian Federation. ⁷Czech Geological Survey, Prague, Czech Republic. ⁸Department of Geosciences and Geography, University of Helsinki, Helsinki, Finland. ⁹State University of Geodesy and Cartography, Moscow, Russian Federation.

205.02 Composition of Chelyabinsk Meteorite: Identifying its Parent Body in the Main Belt

Vishnu Reddy¹, Ed Cloutis², Matthew Cuddy², William Bottke³, Juan Sanchez⁴, Paul Mann², Matthew Izawa², Gary Fujihara⁵, Michael Gaffey⁶, Lucille Le Corre¹

¹Planetary Science Institute, Tucson, AZ, United States. ²University of Winnipeg, Winnipeg, MB, Canada. ³Southwest Research Institute, Boulder, CO, United States. ⁴Max Planck Institute for Solar System Research, Katlenburg-Lindau, Lower Saxony, Germany. ⁵Big Kahuna Meteorites, Hilo, HI, United States. ⁶University of North Dakota, Grand Forks, ND, United States.

205.03 On the metal-rich surfaces of (16) Psyche and other M-type asteroids from interferometric observations in the thermal infrared.

Marco Delbo¹, Alexis Matter², Bastian Gundlach³, Juergen Blum⁴

¹Laboratoire Lagrange, CNRS-Observatoire de la Cote d'Azur, Nice, France. ²Institut de planetologie et d'astrophysique de Grenoble, Grenoble, France. ³Institut fuer Geophysik und extraterrestrische Physik, Technische Universitaet Braunschweig, Braunschweig, Germany. ⁴IMCCE, Observatoire de Paris, UPMC, CNRS, Paris, France.

205.04 Reflectance Properties and Age of the Baptistina Family

Melissa J. Dykhuus¹, Lawrence A. Molnar², Samuel J. Van Kooten², Richard J. Greenberg¹, William F. Bottke³

¹University of Arizona, Tucson, AZ, United States. ²Calvin College, Grand Rapids, MI, United States. ³Southwest Research Institute, Boulder, CO, United States.

205.05 A Map Of The Asteroid Belt By Taxonomic Class, Mass, Distance, And Size

Francesca E. DeMeo¹, Benoit Carry^{2,3}

¹Massachusetts Institute of Technology, Cambridge, MA, United States. ²IMCCE, Paris, France. ³ESAC, Villanueva de la Canada, Madrid, Spain.

- 205.06 Building Blocks of the Terrestrial Planets: Mineralogy of Hungaria Asteroids**
Michael Lucas¹, Joshua P. Emery¹
¹University of Tennessee, Knoxville, TN, United States.
- 205.07 Near-Infrared Spectroscopy of Warm Spitzer-observed Near-Earth Objects**
Cristina A. Thomas¹, Joshua P. Emery², David E. Trilling³, Marco Delbo⁴, Joseph L. Hora⁵, Michael Mueller⁶
¹NASA GSFC/ ORAU, Greenbelt, MD, United States. ²University of Tennessee, Knoxville, TN, United States. ³Northern Arizona University, Flagstaff, AZ, United States. ⁴Observatoire de la Cote d'Azur, Nice, France. ⁵Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, United States. ⁶SRON, Groningen, Netherlands.
- 205.08 Combining visible-to-near-infrared spectra and WISE data of Hildas and Jupiter Trojans: preliminary results.**
Victor Ali-Lagoa^{1,2}, Javier Licandro^{1,2}, Marco Delbo³, Noemí Pinilla-Alonso⁴, Joshua P. Emery⁴, Humberto Campins⁵, Julia de León⁶
¹Instituto de Astrofísica de Canarias, La Laguna, Tenerife, Spain. ²Departamento de Astrofísica, Universidad de La Laguna, La Laguna, Tenerife, Spain. ³UNS-CNRS-Observatoire de la Cote d'Azur, Nice, France. ⁴Department of Earth and Planetary Sciences, University of Tennessee, Knoxville, TN, United States. ⁵Physics Department, University of Central Florida, Orlando, FL, United States. ⁶Department of Edaphology and Geology, University of La Laguna, La Laguna, Tenerife, Spain.
- 205.09 Statistical Study of Aqueous Alteration on Primitive Asteroids**
Cateline Lantz^{1,2}, Sonia Fornasier^{1,2}, Maria Antonietta Barucci¹
¹LESIA Observatoire de Paris, Meudon, France. ²Université Paris Diderot, Paris, France.
- 205.10 Composition and Degree of Alteration of Dark Asteroids**
Margaret McAdam¹, Jessica M. Sunshine¹, Michael S. Kelley¹
¹University of Maryland, College Park, MD, United States.
- 205.11 The Ch asteroids: Connecting a Visible Taxonomic Class to a 3- μ m spectral shape**
Andrew S. Rivkin¹, Ellen S. Howell², Joshua P. Emery³, Eric L. Volquardsen⁴
¹JHU/APL, Laurel, MD, United States. ²Arecibo Observatory, Arecibo, Puerto Rico, United States. ³University of Tennessee, Knoxville, TN, United States. ⁴IRTF, Hilo, HI, United States.
- 205.12 Surface composition of low delta-V near-Earth asteroids, a survey of future targets for space missions**
Simone Ieva^{1,2}, Elisabetta Dotto¹, Davide Perna², Maria Antonietta Barucci², Fabrizio Bernardi³, Sonia Fornasier^{2,4}, Fiore De Luise⁵, Ettore Perozzi^{6,7}, Alessandro Rossi⁸, John Robert Brucato⁹
¹INAF - Oss. Astr. Roma/Univ. Roma TorVergata, Monteporzio Catone, RM, Italy. ²LESIA Obs. Paris, Paris, France. ³Spacedys, Cascina, PI, Italy. ⁴Université Paris Diderot, Paris, France. ⁵INAF - Oss. Astr. Teramo, Teramo, Italy. ⁶Deimos Space, Madrid, Spain. ⁷INAF - IAPS, Rome, Italy. ⁸IFAC - CNR, Sesto Fiorentino, FI, Italy. ⁹INAF - Oss. Astr. Arcetri, Firenze, Italy.

206 Rings

Oral Session 01:30 PM to 03:35 PM in Plaza F

Chair: Eric Bradley & Shawn Brooks

- 206.01 The Neptune System Revisited: New Results on Moons and Rings from the Hubble Space Telescope**
Mark R. Showalter¹, Imke de Pater², Robert S. French¹, Jack J. Lissauer³
¹SETI Institute, Mountain View, CA, United States. ²University of California, Berkeley, CA, United States. ³NASA Ames Research Center, Moffett Field, CA, United States.

206.02 Enceladus' Influence on the Vertical Structure of Saturn's E Ring**Joseph A. Burns¹**¹*Cornell Univ., Ithaca, NY, United States.***Contributing teams: M. Agarwal, M. M. Hedman, M. S. Tiscareno****206.03 Saturn's Ring Temperatures at Equinox****Linda J. Spilker¹**, Cecile Ferrari², Ryuji Morishima^{1,3}¹*JPL, Pasadena, CA, United States.* ²*CEA Saclay/Univ. Paris* ³*Paris, France.* ³*UCLA, Los Angeles, CA, United States.***206.04 Spectral properties and temperature radial profiles of Saturn's main rings by Cassini-VIMS: variability with solar phase and elevation****Gianrico Filacchione¹**, Fabrizio Capaccioni¹, Mauro Ciarniello¹, Roger N. Clark², Phil D. Nicholson³, Dale P. Cruikshank⁴, Robert H. Brown⁵, Jeffrey N. Cuzzi⁴, Nico Altobelli⁶, Linda J. Spilker⁷, Matt M. Hedman³, Cristina M. Dalle Ore⁴, Priscilla Cerroni¹¹*INAF-IAPS, Rome, Italy.* ²*US Geological Survey, Denver, CO, United States.* ³*Cornell University, Astronomy Department, Ithaca, NY, United States.* ⁴*NASA Ames Research Center, Moffett Field, CA, United States.* ⁵*Lunar Planetary Laboratory, University of Arizona, Tucson, AZ, United States.* ⁶*ESA/ESAC, Villafranca Del Castillo, Spain.* ⁷*Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States.***206.05 Observing Saturn's Rings in the Microwave with Cassini****Zhimeng Zhang¹**, Alex G. Hayes^{1,2}, Michael A. Janssen³, Philip D. Nicholson¹, Jeff N. Cuzzi⁴¹*Cornell University, Ithaca, NY, United States.* ²*University of California, Berkeley, Berkeley, CA, United States.* ³*Jet Propulsion Laboratory, Pasadena, CA, United States.* ⁴*NASA Ames Research Center, Moffett Field, CA, United States.***206.06 Saturn Ring Seismology: Interpreting the Seismogram****Mark S. Marley¹**, Jason Jackiewicz²¹*NASA Ames Research Center, Moffett Field, CA, United States.* ²*NMSU, Las Cruces, NM, United States.***206.07 Normal Modes in Saturn's Rings****Philip D. Nicholson¹**, Richard G. French², Matthew M. Hedman^{1,5}, Joshua E. Colwell³, Essam A. Marouf⁴, Colleen McGhee², Kate Lonergan², Talia Sepersky²¹*Cornell Univ., Ithaca, NY, United States.* ²*Wellesley College, Wellesley, MA, United States.* ³*University of Central Florida, Orlando, FL, United States.* ⁴*San Jose State University, San Jose, CA, United States.* ⁵*University of Idaho, Moscow, ID, United States.***206.08 Mapping radial features in Saturn's rings****Matthew S. Tiscareno¹**, Brent E. Harris^{1,2}¹*Cornell Univ., Ithaca, NY, United States.* ²*UCLA, Los Angeles, CA, United States.***206.09 Analysis of Clumps in Saturn's F Ring from Voyager and Cassini Observations****Robert S. French¹**, Shannon K. Hicks¹, Mark R. Showalter¹, Adrienne K. Antonsen¹, Douglas R. Packard²¹*SETI Institute, Mountain View, CA, United States.* ²*University of Illinois, Department of Physics, Urbana, IL, United States.***206.10 Cassini Imaging of Saturn's Huygens Ringlet****Joseph N. Spitale¹**, Joseph M. Hahn²¹*Planetary Science Institute, Tucson, AZ, United States.* ²*Space Science Institute, Austin, TX, United States.***206.11 Measuring Particle Sizes from Diffraction Spikes at Saturn's Ring Edges with Cassini UVIS Stellar Occultations****Tracy M. Becker¹**, Joshua E. Colwell¹, Larry W. Esposito²¹*University of Central Florida, Orlando, FL, United States.* ²*LASP - University of Colorado, Boulder, CO, United States.*

206.12 Stellar Occultation Measurements of Particles in Saturn's Rings.**Rebecca A. Harbison¹**, Philip Nicholson¹¹Cornell University, Ithaca, NY, United States.**207 Titan 1: From the Ground Up****Oral Session 02:40 PM to 03:30 PM in Plaza ABC****Chair: Jason Barnes & Erika Barth****207.01 Probing Titan's North Polar Atmosphere using a Specular Refection of the Sun****Jason W. Barnes¹**, Roger N. Clark², Christophe Sotin³, Mate Adamkovics⁴,Thomas Appere⁵, Sebastien Rodriguez⁵, Jason M. Soderblom⁶, Robert H. Brown⁷,Bonnie J. Buratti³, Kevin H. Baines⁸, Stephane Le Mouelic⁹, Philip D. Nicholson¹⁰¹University of Idaho, Moscow, ID, United States. ²USGS, Denver, CO, United States. ³JPL,Pasadena, CA, United States. ⁴UC Berkeley, Berkeley, CA, United States. ⁵Laboratoire AIM,Paris, France. ⁶MIT, Cambridge, MA, United States. ⁷LPL, Tucson, AZ, United States. ⁸U.Wisconsin, Madison, WI, United States. ⁹Universite Nantes, Nantes, France. ¹⁰Cornell

University, Ithaca, NY, United States.

207.02 Titan's Haystack: the 220 cm⁻¹ ice cloud feature**Carrie Anderson¹**, Robert Samuelson², Donald Jennings¹, Richard Achterberg²,F. M. Flasar¹¹NASA GSFC, Greenbelt, MD, United States. ²University of Maryland, College Park, MD,

United States.

207.03 Modeling Photochemical Processes on Titan: Comparison to Cassini Observations**Yuk Yung¹**, Cheng Li¹, Xi Zhang², Joshua A. Kammer¹, Mao-Chang Liang³,Run-Lie Shia¹¹Caltech, Pasadena, CA, United States. ²University of Arizona, Tucson, AZ, UnitedStates. ³RCEC Academia Sinica, Taipei, Taipei, Taiwan.**207.04 Atmospheric Gravity Waves in Titan's Troposphere and Stratosphere****Katia Matcheva¹**, Darsa Donelan¹¹University of Florida, Gainesville, FL, United States.**207.05 Non-LTE diagnostics of CIRS observations of the Titan's mesosphere****Alexander Kutepov^{1,4}**, Sandrine Vinatier², Artem Feofilov³, Conor Nixon⁴,Corinne Boursier⁵¹The Catholic University of America, Washington, DC, United States. ²LESIA,Observatoire de Paris-Meudon, Paris, France. ³École Polytechnique/CNRS, Paris,France. ⁴NASA/GSFC, Greenbelt, MD, United States. ⁵LPMAA, Université Pierre et Marie

Curie/CNRS, Paris, France.

208 Asteroids Posters 2: Second Helping**Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall****Chair: Erin Ryan****208.01 Olivine or Impact Melt: Origin of the "Orange" Material on Vesta****Lucille Le Corre¹**, Vishnu Reddy¹, Nico Schmedemann², Kris J. Becker³,David P. O'Brien¹, Naoyuki Yamashita¹, Patrick N. Peplowski⁴, Thomas H. Prettyman¹,Jian-Yang Li¹, Edward A. Cloutis⁵, Brett W. Denevi⁴, Thomas Kneissl², Eric Palmer¹,Robert W. Gaskell¹, Andreas Nathues⁶, Michael J. Gaffey⁷, William B. Garry⁸,Holger Sierks⁶, Christopher T. Russell⁹, Carol A. Raymond¹⁰¹Planetary Science Institute, Tucson, AZ, United States. ²Freie Universitaet Berlin, Berlin,Germany. ³Astrogeology Science Center, Flagstaff, AZ, United States. ⁴Johns HopkinsUniversity Applied Physics Laboratory, Laurel, MD, United States. ⁵Department ofGeography, University of Winnipeg, Winnipeg, MB, Canada. ⁶Max-Planck-Institute forSolar System Research, Katlenburg-Lindau, Germany. ⁷Department of Space Studies,University of North Dakota, Grand Forks, ND, United States. ⁸NASA Goddard Spaceflight

Center, Greenbelt, MD, United States. ⁹Institute of Geophysics and Planetary Physics, University of California Los Angeles, Los Angeles, CA, United States. ¹⁰Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States.

208.02 Indication of Melt Sheets on Vesta from Thermal Inertia Calculations

Eric Palmer¹, Mark V. Sykes¹, Gaskell Robert¹, Jian-Yang Li¹

¹Planetary Science Institute, Tucson, AZ, United States.

Contributing teams: The Dawn VIR Team

208.03 Vesta - A Tale of Two Craters

Uri Carsenty¹, S. F. Hviid¹, S. Mottola¹, R. Jaumann¹, C. A. Raymond², C. T. Russell³

¹DLR, Berlin, Germany. ²JPL, California Institute of Technology, Pasadena, CA, United States. ³UCLA, Institute of Geophysics, Los Angeles, CA, United States.

208.04 Vesta's Crustal Properties from the Dawn Gravity Measurements

Sami Asmar¹, Bruce G. Bills¹, Alex Konopliv¹, Ryan S. Park¹, Carol A. Raymond¹

¹JPL, Pasadena, CA, United States.

208.05 A Record of Multiple Cratering Events in the Vesta Asteroid Family

Schelte J. Bus¹

¹Univ. of Hawaii, Hilo, HI, United States.

208.06 The size and pole of Ceres from nine years of adaptive optics observations at Keck and the VLT

Jack D. Drummond¹, Benoit Carry², William J. Merline³, Christophe Dumas⁴, Heidi Hammel⁵, Stephane Erard⁶, Al Conrad⁷, Peter Tamblyn³, Clark Chapman³

¹Air Force Research Laboratory, Kirtland AFB, NM, United States. ²Observatoire de Paris, Paris, France. ³Southwest Research Institute, Boulder, CO, United States. ⁴European Southern Observatory, Santiago de Chile, Chile. ⁵Association of Universities for Research in Astronomy, Washington, DC, United States. ⁶Observatoire de Paris, Meudon Cedex, France. ⁷Max-Planck-Institut fuer Astronomie, Heidelberg, Germany.

208.07 Latitudinal Spectral Variations on Asteroid 101955 Bennu

Richard P. Binzel¹, Francesca DeMeo¹

¹MIT, Cambridge, MA, United States.

208.08 Physical Characterization of Binary Near-Earth Asteroid (153958) 2002 AM31

Patrick A. Taylor¹, Ellen S. Howell¹, Michael C. Nolan¹, Alessondra Springmann¹, Marina Brozovic², Lance A. M. Benner², Joseph S. Jao², Jon D. Giorgini², Jean-Luc Margot³, Julia Fang³, Tracy M. Becker⁴, Yanga R. Fernandez⁴, Ronald J. Vervack⁵, Petr Pravec⁶, Peter Kusnirak⁶, Lorenzo Franco⁷, Andrea Ferrero⁸, Adrian Galad^{6,9}, Donald P. Pray¹⁰, Brian D. Warner¹¹, Michael D. Hicks²

¹Arecibo Observatory, Arecibo, Puerto Rico, United States. ²Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States. ³University of California, Los Angeles, Los Angeles, CA, United States. ⁴University of Central Florida, Orlando, FL, United States. ⁵The Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States. ⁶Astronomical Institute, Academy of Sciences of the Czech Republic, Ondrejov, Czech Republic. ⁷Balzaretto Observatory, Rome, Italy. ⁸Bigmuskie Observatory, Mombercelli, Italy. ⁹Modra Observatory, Bratislava, Slovakia. ¹⁰Sugarloaf Mountain Observatory, South Deerfield, MA, United States. ¹¹Palmer Divide Observatory/ MoreData!, Colorado Springs, CO, United States.

208.09 Coordinated Time Resolved Spectrophotometry of Asteroid 163249 (2002 GT)

Erin L. Ryan¹, Charles Woodward², Michael Gordon², Mark R. Wagner⁴, Steve Chesley³, Michael Hicks³, Jana Pittichova³, Petr Pravec⁵

¹ORAU-Goddard Space Flight Center, Greenbelt, MD, United States. ²Univ. of Minnesota, Minneapolis, MN, United States. ³JPL/Caltech, Pasadena, CA, United States. ⁴LBTO, Tucson, AZ, United States. ⁵Astron. Inst. Acad. Sci., Ondrejov, Ondrejov, Czech Republic.

- 208.10 Thermal Emission Photometry of Deep Impact Flyby Target (163249) 2002 GT**
Lucy F. Lim¹, Nicholas A. Moskovitz², Javier Licandro⁴, Joshua P. Emery³, Vishnu Reddy⁵, Faith Vilas⁶
¹NASA / GSFC, Greenbelt, MD, United States. ²MIT, Cambridge, MA, United States.
³U. Tennessee, Knoxville, TN, United States. ⁴Instituto Astrofísica de Canarias, Tenerife, Spain. ⁵Max Planck Institute for Solar System Research, Katlenburg-Lindau, Germany. ⁶PSI, Tucson, AZ, United States.
Contributing teams: The 2002 GT Observing Team
- 208.11 The Asteroid 1998 QE2**
Alberto Q. Vodniza¹, Mario R. Pereira¹
¹Physics, University of Narino Observatory, PASTO, NARINO, Colombia.
Contributing teams: Arecibo Observatory, JPL, Target Asteroids Team.
- 208.12 An Initial Analysis Of Galileo Nims Asteroid 951 Gaspra Point Spectra**
James C. Granahan¹
¹SAIC, Bealeton, VA, United States.
- 208.13 Numerical Studies of Electrostatic Dust Motion about Itokawa**
Christine Hartzell¹, Michael Zimmerman², Yu Takahashi³, Daniel Scheeres³
¹California Institute of Technology, Pasadena, CA, United States. ²Goddard Space Flight Center, Greenbelt, MD, United States. ³University of Colorado at Boulder, Boulder, CO, United States.
- 208.14 Contrasting Q-type Asteroid Regolith from the S-complex Through Polarimetry**
Chester Maleszewski¹, Robert S. McMillan¹, Paul S. Smith¹
¹University of Arizona, Tucson, AZ, United States.
- 208.15 An Investigation of the 3-?m Feature in M-Type Asteroids**
Zoe A. Landsman¹, Humberto Campins¹, Kelsey Hargrove¹, Noemí Pinilla-Alonso², Joshua Emery², Julie Ziffer³
¹University of Central Florida, Orlando, FL, United States. ²University of Tennessee, Knoxville, TN, United States. ³University of Southern Maine, Portland, ME, United States.
- 208.16 2012 DA14 and Chelyabinsk: Same Day Coincidence?**
Clark R. Chapman¹
¹Southwest Research Inst., Boulder, CO, United States.
- 208.17 Application of a Shape-Based Thermophysical Model to Contact Binary Near-Earth Asteroids**
Sean Marshall¹, Ellen S. Howell², Christopher Magri³, Ronald J. Vervack⁴, Yanga R. Fernandez⁵, Michael C. Nolan², Patrick A. Taylor², Alessondra Springmann²
¹Cornell University, Ithaca, NY, United States. ²Arecibo Observatory, Arecibo, Puerto Rico, United States. ³University of Maine at Farmington, Farmington, ME, United States. ⁴Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States. ⁵University of Central Florida, Orlando, FL, United States.
- 208.18 Asteroid Thermal Properties Derived from Meteorite Data**
Guy Consolmagno¹, Robert J. Macke¹, Daniel T. Britt²
¹Specola Vaticana, Vatican City, Holy See (Vatican City State). ²University of Central Florida, Orlando, FL, United States.
- 208.19 Constraints on Spin Axis and Thermal Properties of Asteroids in the WISE Catalog**
Eric M. MacLennan¹, Joshua P. Emery¹
¹University of Tennessee, Knoxville, TN, United States.
- 208.20 Asteroid Family Identification Using Physical Properties from WISE/NEOWISE**
Joseph R. Masiero¹, Amy Mainzer¹, James Bauer¹, Tommy Grav², Carolyn Nugent¹, Rachel Stevenson¹
¹JPL, Pasadena, CA, United States. ²PSI, Tucson, AZ, United States.

- 208.21 Albedo, Size and Taxonomy of the Small Body Populations Outside the Main Belt**
Tommy Grav¹, Amy Mainzer², James M. Bauer^{2,3}, Joseph R. Masiero^{2,3},
 Carolyn R. Nugent², Rachel A. Stevenson²
¹Planetary Science Institute, Bloomington, IN, United States. ²Jet Propulsion Laboratory,
 Pasadena, CA, United States. ³Infrared Processing and Analysis Center, California
 Institute of Technology, Pasadena, CA, United States.
- 208.22 Absolute Magnitudes of Pan-STARRS PS1 Asteroids**
Peter Veres^{1,2}, Robert Jedicke¹, Alan Fitzsimmons³, Larry Denneau¹,
 Richard Wainscoat¹, Bryce Bolin¹
¹Institute for Astronomy, University of Hawaii in Manoa, Honolulu, HI, United States. ²
 Comenius University, Bratislava, Slovakia. ³Queen's University, Belfast, United Kingdom.
Contributing teams: PS1SC collaboration
- 208.23 Small-body Colors From the UV to the IR: Bringing Together all Space and**
Ground-based Observations
Paulo F. Penteado¹, David Trilling¹, Cesar I. Fuentes¹
¹Northern Arizona University, Flagstaff, AZ, United States.
- 208.24 Linnaeus: Boosting Near Earth Asteroid Characterization Rates**
Martin Elvis¹, Charlie Beeson^{3,1}, Jose Luis Galache^{2,1}, Francesca DeMeo^{4,1}, Ian Evans¹,
 Janet Evans¹, Nicholas Konidaris⁵, Joan Najita⁶, Lori Allen⁶, Eric Christensen⁷,
 Timothy Spahr^{2,1}
¹Harvard-Smithsonian CfA, Cambridge, MA, United States. ²IAU Minor Planet Center,
 Cambridge, MA, United States. ³University of Southampton, Southampton, United
 Kingdom. ⁴Massachusetts Insitute of Technology, Cambridge, MA, United States. ⁵
 California Insitute of Technology, Pasadena, CA, United States. ⁶Kitt Peak National
 Observatory, Tucson, AZ, United States. ⁷University of Arizona, Tucson, AZ, United States.
- 208.25 Single vs. Multiple Transponders for Radio Tomography of Asteroids**
Sampsa Pursiainen^{1,2}, Mikko Kaasalainen¹
¹Tampere University of Technology, Tampere, Finland. ²Aalto University, Espoo, Finland.
Contributing teams: TUT Inverse Problems Group led by Prof. Mikko
Kaasalainen
- 208.26 Realistic Simulations Of Radar Scattering In Asteroids Using Geometric Optics**
Anne Virkki¹, Karri Muinonen^{1,2}, Antti Penttilä¹
¹University of Helsinki, Helsinki, Finland. ²Finnish Geodetic Institute, Masala, Finland.
- 208.27 Follow-up and Characterization of NEOs with the LCOGT Network**
Tim Lister¹
¹Las Cumbres Observatory, Goleta, CA, United States.
- 208.28 High Ecliptic Latitude Survey for Small Main-Belt Asteroids**
Tsuyoshi Terai¹, Jun Takahashi², Yoichi Itoh²
¹National Astronomical Observatory of Japan, Mitaka, Tokyo, Japan. ²University of
 Hyogo, Sayo, Hyogo, Japan.
- 208.29 MP3C - the Minor Planet Physical Properties Catalogue: a New VO Service For**
Multi-database Query
Paolo Tanga¹, Marco Delbo¹, Jerome Gerakis¹
¹Observatoire de La Côte D'Azur, Nice, Cedex ⁴France, France.
- 208.30 The Mission Accessible Near-Earth Objects Survey (MANOS)**
Paul Abell¹, Nicholas Moskovitz², David Trilling³, Cristina Thomas⁴, Mark Willman⁵,
 Will Grundy⁶, Henry Roe⁶, Eric Christensen⁷, Michael Person², Richard Binzel²,
 David Polishook², Francesca DeMeo², Thomas Endicott⁸, Michael Busch⁹
¹NASA Johnson Space Center, Houston, TX, United States. ²Massachusetts Institute of
 Technology, Cambridge, MA, United States. ³Northern Arizona University, Flagstaff,
 AZ, United States. ⁴NASA Goddard Space Flight Center, Greenbelt, MD, United States. ⁵
 University of Hawaii, Honolulu, HI, United States. ⁶Lowell Observatory, Flagstaff,

AZ, United States. ⁷University of Arizona, Tucson, AZ, United States. ⁸University of Massachusetts Boston, Boston, MA, United States. ⁹National Radio Astronomy Observatory, Charlottesville, VA, United States.

- 208.31 A Search for Volatiles and Spectral Variation on the Surfaces of Trojan Asteroids**
Joshua P. Emery¹, Richard G. Ness¹, Michael P. Lucas¹
¹University of Tennessee, Knoxville, TN, United States.
- 208.32 A Search for Colorful Characters Among the Jupiter Greeks and Trojans**
Joseph Chatelain¹, Tiffany Pewett¹, Todd Henry¹, Linda French², Jennifer Winters¹
¹Georgia State University, Atlanta, GA, United States. ²Illinois Wesleyan University, Bloomington, IL, United States.
- 208.33 Search for Meter-sized Bodies in Meteoroid Streams**
Marco Micheli¹, David J. Tholen¹
¹Institute for Astronomy - University of Hawaii, Honolulu, HI, United States.

209 Exoplanets Posters 2

Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall

Chair: Nicolas Cowan

- 209.01 A Review of Correlated Noise in Exoplanet Light Curves**
Patricio Cubillos^{1,2}, Joseph Harrington^{1,2}, Jasmina Blecic¹, Ryan A. Hardy^{1,3}, Matthew Hardin^{1,4}
¹University of Central Florida, Orlando, FL, United States. ²Max Planck Institut für Astronomie, Heidelberg, Germany. ³University of Colorado at Boulder, Boulder, CO, United States. ⁴Clemson University, Clemson, SC, United States.
- 209.02 Pipeline Characterization and Validation of Small HZ Planet Candidates in the Four-Year (Q1-Q16) Kepler Data Set**
Joseph D. Twicken¹, Bruce D. Clarke¹, Forrest Girouard², Todd C. Klaus², Jie Li¹, Sean D. McCauliff², Elisa V. Quintana¹, Shawn E. Seader¹, Peter Tenenbaum¹, Jon M. Jenkins¹, Natalie M. Batalha³, Stephen T. Bryson³, Christopher J. Burke¹, Douglas A. Caldwell¹, Jason F. Rowe¹
¹SETI Institute, Mountain View, CA, United States. ²Orbital Sciences Corporation, Moffett Field, CA, United States. ³NASA Ames Research Center, Moffett Field, CA, United States.
Contributing teams: Kepler Science Operations Center, Kepler Science Office
- 209.03 Follow-up of Kepler candidates transiting hot-Jupiter with ground based photometry**
Clement Gaillard¹, Denise Stephens¹, Jessica Larson¹, Emily Ranquist¹, Emily Stoker¹, Joseph Rawlins¹
¹BYU, Provo, UT, United States.
- 209.04 Photometric Observations of Transiting Planet Candidates With a Small Telescope**
Emily Stoker¹, Denise Stephens¹, Pamela Lara², Emily Ranquist¹
¹Brigham Young University, Provo, UT, United States. ²Utah Valley University, Orem, UT, United States.
- 209.05 Beyond Exoplanets: Taking advantage of Kepler Object of Interest fields after the presence or absence of an exoplanet has been documented.**
Pamela I. Lara^{1,2}
¹Brigham Young University, Provo, UT, United States. ²Utah Valley University, Orem, UT, United States.
Contributing teams: Dr. Denise Stephens, Dr. Michael Jøner

- 209.06
- Transit Model Fitting In The Kepler Science Operations Center Pipeline: New Features And Performance
- Jie Li^{1,2}, Christopher J. Burke^{1,2}, Jon M. Jenkins^{1,2}, Elisa V. Quintana^{1,2}, Jason F. Rowe^{1,2}, Shawn E. Seader^{1,2}, Peter Tenenbaum^{1,2}, Joseph D. Twicken^{1,2}
- ¹SETI Institute, Mountain View, CA, United States. ²NASA Ames Research Center, Moffett Field, CA, United States.
- 209.07
- Computational Challenges in Processing the Q1-Q16 Kepler Data Set
- Todd C. Klaus¹, Christopher Henze², Joseph D. Twicken³, Jennifer Hall¹, Sean D. McCauliff¹, Forrest Girouard¹, Miles Cote², Robert L. Morris³, Bruce Clarke³, Jon M. Jenkins³, Douglas Caldwell³
- ¹Orbital Sciences Corp., Moffett Field, CA, United States. ²NASA Ames Research Center, Mountain View, CA, United States. ³SETI Institute, Moffett Field, CA, United States.
- Contributing teams: Kepler Science Operations Center
- 209.08
- Effect of Clouds on Exoplanet Visible-Wavelength Phase Curve Observations
- Matthew W. Webber¹, Nikole Lewis¹, Mark Marley², Jonathan Fortney³, Kerri Cahoy¹
- ¹EAPS, MIT, Cambridge, MA, United States. ²NASA Ames, Moffett Field, CA, United States. ³University of California, Santa Cruz, CA, United States.
- 209.09
- A radiative-convective equilibrium model for young giant exoplanets: Application to beta Pictoris b
- Jean-Loup Baudino¹, Bruno Bézard¹, Anthony Boccaletti¹, Anne-Marie Lagrange², Mickael Bonnefoy³
- ¹Observatoire de Paris, Meudon, France. ²UJF-Grenoble/INSU, Grenoble, France. ³MPIA, Heidelberg, Germany.
- 209.10
- Formation of Atmospheric Jets and Vortices: From Gas Giants to Brown Dwarfs
- Xi Zhang¹, Adam P. Showman¹
- ¹University of Arizona, Tucson, AZ, United States.
- 209.11
- “Exploring atmospheres of Mini-Neptunes orbiting different stars: the effect of stellar flares”
- Yamila Miguel¹, Lisa Kaltenegger^{1,2}
- ¹Max Planck Institute for Astronomy, Heildeberg, Baden-Wuttemberg, Germany. ²CfA, Cambridge, MA, United States.
- 209.12
- Exoplanet Equilibrium Chemistry Calculations
- Sarah Blumenthal¹, Joseph Harrington¹, M. Oliver Bowman¹, Jasmina Blecic¹
- ¹University of Central Florida, Orlando, FL, United States.
- 209.13
- Spectral Fingerprints of Mini and Super Earths
- Sarah Rugheimer¹, Lisa Kaltenegger^{1,2}, Dimitar Sasselov¹
- ¹Harvard Smithsonian Center for Astrophysics, Cambridge, MA, United States. ²Max Planck Institute for Astronomy, Heidelberg, Germany.
- 209.14
- The Effects of Refraction on Transit Transmission Spectroscopy
- Amit Misra¹, Victoria Meadows¹
- ¹University of Washington, Seattle, WA, United States.
- 209.15
- Two HAT-P-16b Spitzer Eclipse Observations
- Matthew R. Hardin^{1,2}, Joseph Harrington^{1,3}, Jonathan J. Fortney⁴, Andrew S. Foster¹, Patricio E. Cubillos^{1,3}, Ryan A. Hardy^{1,5}, Oliver Bowman¹, Jasmina Blecic¹, Joel D. Hartman⁶, Gaspar Á. Bakos⁶
- ¹University of Central Florida, Orlando, FL, United States. ²Clemson University, Clemson, SC, United States. ³Max-Planck-Institut für Astronomie, Heidelberg, Germany. ⁴University of California Santa Cruz, Santa Cruz, CA, United States. ⁵University of Colorado Boulder, Boulder, CO, United States. ⁶Princeton University, Princeton, NJ, United States.

- 209.16 Secondary Eclipse Observations of the Low-Mass Hot-Jupiter WASP-11b/HAT-P-10b**
M. Oliver Bowman¹, Joseph Harrington¹, Jasmina Blecic¹, Andrew Foster¹,
 Kevin B. Stevenson², Patricio Cubillos¹, Andrew Collier Cameron³
¹University of Central Florida, Orlando, FL, United States. ²University of Chicago,
 Chicago, IL, United States. ³SUPA, School of Physics and Astronomy, University of St
 Andrews, St Andrews, Fife, United Kingdom.
Contributing teams: UCF Exoplanets Group

210 Rings Posters

Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall

Chair: Gianrico Filacchione & Matthew Tiscareno

- 210.01 Features in Saturn's F Ring**
Morgan Rehnberg¹, Larry W. Esposito¹, Miodrag Sremčević¹, Bonnie K. Meinke²
¹University of Colorado - Boulder, Boulder, CO, United States. ²Space Telescope Science
 Institute, Baltimore, MD, United States.
- 210.02 Some Results On The Production And Orbital Evolution Of Small Particles In
The G Ring Arc**
Silvia M. Giuliatti-Winter¹, Rafael Sfair¹, Décio C. Mourão¹
¹Campus De Guaratingueta UNESP, Guaratingueta, SP, Brazil, Brazil.
- 210.03 Predator-Prey Model for Haloes in Saturn's Rings**
Larry W. Esposito¹, Prasanna Madhusudhanan¹, Joshua E. Colwell², E. Todd Bradley²,
 Miodrag Sremčević¹
¹Univ. of Colorado, Boulder, CO, United States. ²University of Central Florida, Orlando, FL,
 United States.
- 210.04 Looking Forward to Cassini's Proximal Orbits: the Innermost Radiation Belt of
Saturn**
John F. Cooper¹, Peter Kollmann², Chris Paranicas², Donald G. Mitchell²,
 Matthew M. Hedman³, Scott G. Edgington⁴, Edward C. Sittler¹, Richard E. Hartle¹,
 Robert E. Johnson⁵, Steven J. Sturmer⁶
¹NASA Goddard Space Flight Center, Greenbelt, MD, United States. ²Applied Physics
 Laboratory Johns Hopkins University, Laurel, MD, United States. ³Cornell University,
 Ithaca, NY, United States. ⁴NASA Jet Propulsion Laboratory, Pasadena, CA, United
 States. ⁵University of Virginia, Charlottesville, VA, United States. ⁶CRESST / University of
 Maryland Baltimore County, Baltimore, MD, United States.
Contributing teams: Cassini Proximal Hazard Working Group
- 210.05 Temperatures of wakes in Saturn's A ring**
Ryuji Morishima^{1,2}, Linda Spilker², Neal Turner²
¹University of California Los Angeles, Los Angeles, CA, United States. ²Jet Propulsion
 Laboratory, Pasadena, CA, United States.
Contributing teams: Cassini CIRS ring team
- 210.06 Small Particle Population in Saturn's A Ring from Self-Gravity Wake
Observations**
Joshua E. Colwell¹, Richard G. Jerousek¹, Philip D. Nicholson², Matthew M. Hedman³,
 Larry W. Esposito⁴, Rebecca Harbison², Robert A. West⁵
¹University of Central Florida, Orlando, FL, United States. ²Cornell University, Ithaca, NY,
 United States. ³University of Idaho, Moscow, ID, United States. ⁴University of Colorado,
 Boulder, CO, United States. ⁵Jet Propulsion Laboratory, CalTech, Pasadena, CA, United
 States.
- 210.07 Higher Order Moments in the Statistics of Stellar Occultations of Saturn's Rings**
James Cooney¹, Joshua E. Colwell¹, Larry W. Esposito²
¹University of Central Florida, Orlando, FL, United States. ²Laboratory for Atmospheric
 and Space Physics, University of Colorado, Boulder, CO, United States.

- 210.08 Hydrodynamic Simulations of Planetary Rings**
Jacob Miller¹, G. R. Stewart¹, L. W. Esposito¹
¹University of Colorado, Boulder, CO, United States.
- 210.09 Compositional and Mixing Model Analysis of Cassini UVIS Spectra of Saturn's Rings**
Todd Bradley¹, Joshua Colwell¹, Larry Esposito², Roger Clark³
¹University of Central Florida, Orlando, FL, United States. ²University of Colorado, Boulder, CO, United States. ³United States Geological Survey, Denver, CO, United States.
- 210.10 Modeling Saturnshine in Cassini Images of the Rings**
Henry C. Dones¹, John W. Weiss^{2,3}, Carolyn C. Porco², Daiana DiNino², Ryan Skinner⁴
¹Southwest Research Inst., Boulder, CO, United States. ²Cassini Imaging Central Laboratory for Operations, Boulder, CO, United States. ³Saint Martin's University, Lacey, WA, United States. ⁴Carleton College, Northfield, MN, United States.
- 210.11 Mapping the Thermal Inertia of Saturn's Rings with Cassini CIRS**
Shawn M. Brooks¹, Linda J. Spilker¹, Stuart H. Pillorz², Mark R. Showalter²
¹JPL, Pasadena, CA, United States. ²SETI Institute, Mountain View, CA, United States.
- 210.12 Analysis of Bending Waves in Saturn's Rings with Cassini UVIS Stellar Occultations**
Allison Bratcher¹, Joshua E. Colwell¹
¹University of Central Florida, Orlando, FL, United States.
- 210.13 Saturn's Maxwell Ringlet from Cassini UVIS Observations**
Nicole Albers¹, Miodrag Sremcevic¹, Larry W. Esposito¹
¹LASP/University of Colorado, Boulder, CO, United States.
- 210.14 Analytical and numerical study of capture scenarios of a satellite in coupled mean motion resonances**
Maryame El Moutamid^{1,2}, Bruno Sicardy^{1,3}, Stéfan Renner^{2,4}
¹LESIA - Paris Observatory, Meudon, France. ²IMCCE Paris Observatory, Paris, France. ³UPMC University, Paris, France. ⁴Lille University, Lille, France.
- 210.15 The effects of Micrometeoroid Bombardment and Ballistic Transport on the C Ring's Structure.**
Paul R. Estrada¹, Jeff N. Cuzzi²
¹CSC, SETI Institute, Mountain View, CA, United States. ²NASA Ames, Mountain View, CA, United States.
- 210.16 Ground-based optical and polarized opposition effect of the Saturn's B ring: observations and numerical modeling**
Estelle Deau^{1,2}, Karri Muinonen³
¹Jet Propulsion Laboratory NASA, Pasadena, CA, United States. ²SETI, Mountain View, CA, United States. ³University of Helsinki, Helsinki, Finland.
- 210.17 Cassini UVIS highest resolution occultations of Saturn's rings**
Miodrag Sremcevic¹, Larry W. Esposito¹, Josh Colwell²
¹Univ. of Colorado, Boulder, CO, United States. ²University of Central Florida, Orlando, FL, United States.

211 Missions and Facilities: Present and Future Posters

Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall

Chair: Andrew Steffl & Theodor Kostiuk

- 211.01 Planetary investigations in the X-ray band: Prospects for an X-ray imaging spectrometer**
Ralph P. Kraft¹, Almus Kenter¹, Stephen Murray^{2,1}, Graziella Branduardi-Raymont³, Martin Elvis¹, George Fraser⁴, Randall Smith¹, William Forman¹, Christine Jones¹, Elke Roediger^{5,1}
¹Harvard-Smithsonian, CfA, Cambridge, MA, United States. ²Johns Hopkins University,

Baltimore, MD, United States. ³MSSL, Dorking, Surrey, United Kingdom. ⁴University of Leicester, Leicester, Leicestershire, United Kingdom. ⁵Hamburger Sternwarte, Hamburg, Hamburg, Germany.

- 211.02 The Earth-orbiting EUV spectroscope (EXCEED) on board the SPRINT-A mission**
Kazuo Yoshioka¹, Ichiro Yoshikawa², Fuminori Tsuchiya³
¹Japan Aerospace Exploration Agency, Sagami-hara, Kanagawa, Japan. ²The University of Tokyo, Bunkyo-ku, Tokyo, Japan. ³Tohoku University, Sendai, Miyagi, Japan.
Contributing teams: EXCEED team
- 211.03 Deriving Atmospheric Properties and Escape Rates from MAVEN's Imaging UV Spectrograph (IUVS)**
Nicholas M. Schneider¹
¹LASP, U. Colorado, Boulder, CO, United States.
Contributing teams: IUVS Science Team
- 211.04 The Ultraviolet Spectrograph (UVS) on ESA's JUICE Mission**
Randy Gladstone¹, Kurt Retherford¹, Andrew Steffl², John Eterno¹, Michael Davis¹, Maarten Versteeg¹, Thomas Greathouse¹, Mary Frances Araujo¹, Brandon Walther¹, Kristian Persson¹, Steve Persyn¹, Greg Dirks¹, Melissa McGrath³, Paul Feldman⁴, Fran Bagenal⁵, John Spencer², Eric Schindhelm², Leigh Fletcher⁶
¹Southwest Research Institute, San Antonio, TX, United States. ²Southwest Research Institute, Boulder, CO, United States. ³NASA/MSFC, Huntsville, AL, United States. ⁴The Johns Hopkins University, Baltimore, MD, United States. ⁵LASP/CU, Boulder, CO, United States. ⁶Oxford University, Oxford, United Kingdom.
- 211.05 Developing and Calibrating a Tunable Spatial Heterodyne Spectroscopy (SHS) for Visible and UV Interferometry of Extended Targets**
Walter M. Harris¹, S. Sona Hosseini²
¹University of Arizona, Tucson, AZ, United States. ²University of California, Davis, Davis, CA, United States.
- 211.06 Occultations with the LCOGT network.**
Federica Bianco^{1,2}, Timothy Lister¹, Andrew Pickles¹, Wayne Rosing¹, Timothy Brown¹
¹New York University, New York, NY, United States. ²Las Cumbres Global Telescope Network, Inc., Goleta, CA, United States.
Contributing teams: the LCOGT team
- 211.07 Solar System Science with HST and JWST: Connecting the Past, Present, and Future**
Anthony Roman¹, Dean Hines¹, Jason Kalirai¹, Max Mutchler¹
¹STScI, Baltimore, MD, United States.
- 211.08 Solar System Science with the James Webb Space Telescope**
Heidi B. Hammel^{1,2}, J. Norwood³, N. Chanover³, D. C. Hines⁴, J. Stansberry⁴, J. I. Lunine⁵, M. S. Tiscareno⁵, S. N. Milam⁶, G. Sonneborn⁶, M. Brown⁷
¹AURA, Washington, DC, United States. ²SSI, Boulder, CO, United States. ³NMSU, Las Cruces, NM, United States. ⁴STScI, Baltimore, MD, United States. ⁵Cornell, Ithaca, NY, United States. ⁶GSFC, Greenbelt, MD, United States. ⁷Caltech, Pasadena, CA, United States.
- 211.09 Solar System Observing Capabilities With The James Webb Space Telescope**
George Sonneborn¹, Stefanie N. Milam¹, Dean C. Hines², John Stansberry², Heidi B. Hammel³, Jonathan I. Lunine⁴
¹NASA's GSFC, Greenbelt, MD, United States. ²STScI, Baltimore, MD, United States. ³AURA, Washington, DC, United States. ⁴Cornell Univ., Ithaca, NY, United States.
- 211.10 SOFIA: Review of Initial Science Operations, 2010 - 2013**
Allan W. Meyer¹
¹USRA / SOFIA, Moffett Field, CA, United States.

- 211.11 The NASA Infrared Telescope Facility: Instrument Upgrades and Plans**
Alan T. Tokunaga¹, Schelte J. Bus¹, Michael S. Connelley¹, John T. Rayner¹
¹Univ. of Hawaii, Honolulu, HI, United States.
- 211.12 A Multi-Color Simultaneous Imager Instrument Concept for the IRTF**
Michael Connelley¹, Alan Tokunaga¹, Schelte Bus¹
¹University of Hawaii, Hilo, HI, United States.
- 211.13 An Approach to Spectropolarimetry for Solar System Exploration**
William B. Sparks¹
¹STScI, Baltimore, MD, United States.
- 211.14 Mission Concepts Enabled by Solar Electric Propulsion and Advanced Modular Power Systems**
Kurt K. Klaus¹, Michael S. Elsperman¹, Ford Rogers¹
¹The Boeing Company, Huntington Beach, CA, United States.
- 211.15 Venus Atmospheric Maneuverable Platform (VAMP)**
Kristen L. Shapiro Griffin¹, Daniel Sokol¹, Dean Dailey¹, Greg Lee¹, Ron Polidan¹
¹Northrop Grumman, Redondo Beach, CA, United States.
- 211.16 Mars Mission Concepts: SAR and Solar Electric Propulsion**
Michael Elsperman¹, Stephen Clifford², Samuel Lawrence³, Kurt Klaus¹, David Smith¹
¹The Boeing Company, Huntington Beach, CA, United States. ²Lunar and Planetary Institute, Houston, TX, United States. ³Arizona State University, Tempe, AZ, United States.
- 211.17 Mars 2020 Science Rover: Science Goals and Mission Concept**
John F. Mustard¹, Dave Beaty², Deborah Bass²
¹Brown University, Providence, RI, United States. ²Jet Propulsion Laboratory, Pasadena, CA, United States.
- 211.18 Planetary Surface Exploration Using Raman Spectroscopy on Rovers and Landers**
Jordana Blacksberg¹, Erik Alerstam¹, Yuki Maruyama¹, Edoard Charbon³, George R. Rossman²
¹Jet Propulsion Laboratory, Pasadena, CA, United States. ²California Institute of Technology, Pasadena, CA, United States. ³Delft University of Technology, Delft, Netherlands.
- 211.19 Advanced Mass Spectrometry for In Situ Analysis of Comet and Primitive Asteroid Composition**
Stephanie Getty¹, Paul R. Mahaffy¹, William B. Brinckerhoff¹, Mehdi Benna^{2,1}, Ricardo D. Arevalo¹, Timothy Cornish³, Jamie Elsila¹
¹NASA Goddard Space Flight Center, Greenbelt, MD, United States. ²University of Maryland Baltimore County, Baltimore, MD, United States. ³C&E Research, Inc., Columbia, MD, United States.
- 211.20 Scientific Packages on Small Bodies, a Deployment Strategy for New Missions**
Simon Tardivel^{1,2}, Dan J. Scheeres¹, Patrick Michel²
¹The University of Colorado at Boulder, Boulder, CO, United States. ²Observatoire de la Côte d'Azur, Nice, France.
- 211.21 Castalia: A European Mission to a Main Belt Comet**
Colin Snodgrass¹
¹Max Planck Institute for Solar System Research, Katlenburg-Lindau, Germany.
Contributing teams: Castalia mission science team
- 211.22 Trojan Tour Enabled by Solar Electric Based Mission Architecture**
David B. Smith¹, Kurt Klaus³, John Behrens², Gary Bingaman², Michael Elsperman², Jerry Horsewood⁴
¹Boeing, Arlington, VA, United States. ²Boeing, Huntington Beach, CA, United States. ³Boeing, Houston, TX, United States. ⁴Space Flight Solutions, Hendersonville, NC, United States.

- 211.23 Characterizing the Populations of Small Bodies from the Kuiper Belt to the Oort Cloud: Technology Development and Science Case for the Whipple Mission Concept**
Charles Alcock¹, Stephen Murray¹, Ralph Kraft¹, Almus Kenter¹, Pavlos Protopapas¹, Michael Werner², Roger Lee²
¹Harvard-Smithsonian, CfA, Cambridge, MA, United States. ²JPL, Pasadena, CA, United States.
- 211.24 A Discovery Mission to Determine the Interior Structure of Gas- and Ice-Giants**
Mark D. Hofstadter¹, Neil Murphy¹, Steve Matousek¹, Sarah Bairstow¹, Frank Maiwald¹, Stuart Jeffries², Francois-Xavier Schmider³, Tristan Guillot⁴
¹JPL/Caltech, Pasadena, CA, United States. ²Univ. Hawaii, Oahu, HI, United States. ³Univ. de Nice, Nice, France. ⁴Obs. Cote d'Azur, Nice, France.
- 211.25 The Exoplanet Characterisation Observatory (EChO) : an ESA mission to characterize exoplanets**
Pierre Drossart¹, Paul Hartogh², Kate Isaak³, Christophe Lovis⁴, Giusi Micela⁵, Marc Ollivier⁶, Ignasi Ribas⁷, Ignas Snellen⁸, Bruce Swinyard⁹, Giovanna Tinetti⁹, Ludovic Puig³, Martin Linder³
¹LESIA, Observatoire de Paris, Meudon, France. ²Max-Planck Institut für Solar System Research, Katlenburg-Lindau, Germany. ³ESA-ESTEC, Science and Robotic Exploration Directorate, Noordwijk, Netherlands. ⁴University of Geneva, Geneva, Switzerland. ⁵INAF Osservatorio Astronomico di Palermo, Palermo, Italy. ⁶Institut d'Astrophysique, Orsay, France. ⁷Institut de Ciències de l'Espai, Barcelona, Spain. ⁸Leiden Observatory, Leiden, Netherlands. ⁹University College, London, United Kingdom.
Contributing teams: EChO ESA Science Team, EChO ESA Study Team
- 211.26 NASA's Planetary Data System—An Accumulating Archive developed by Scientists for Scientists**
Thomas H. Morgan¹, Stephanie A. McLaughlin², Edwin J. Grayzeck¹, William P. Knopf³, Faith Vilas⁴, Daniel J. Crichton⁵
¹NASA/Goddard Space Flight Center, Greenbelt, MD, United States. ²Telophase Corporation, Arlington, VA, United States. ³NASA/Headquarters, Washington, DC, United States. ⁴Planetary Science Institute, Tucson, AZ, United States. ⁵NASA/Jet Propulsion Laboratory, Pasadena, CA, United States.
- 211.27 BRRISON Mission Design and Development**
Terence O'Malley¹, Tibor Kremic¹, Dewey Adams², Steve Arnold², Andrew Cheng²
¹NASA/GRC, Cleveland, OH, United States. ²JHU/APL, Laurel, MD, United States.
- 211.28 An update on the NASA Planetary Science Division R&A Program: Historical trends, ROSES 2012 statistics, and lessons learned**
Christina Richey^{1,2}
¹NASA Headquarters, Washington, DC, United States. ²Smart Data Solutions, Washington, DC, United States.

211.29 TRIDENT: Taking Remote and In-situ Data to Explore Neptune and Triton
Sona Hosseini¹, Paul Ries², Philip Fernandes³, Mike Malaska², Jennifer Scully⁴,
Ryan Clegg⁵, Alex Patthoff², Farah Alibay⁶, Jason Leonard⁷, Kyle Uckert⁸,
Mackenzie Day⁹, Michael Hutchins¹⁰, Nicolas Fougere¹¹, Patricia Craig¹²,
Ryan McGranaghan⁷, Zachary Girazian¹³, Karl Mitchell², Charles Budney²
¹University of California, Davis, Woodland, CA, United States. ²Jet Propulsion Laboratory,
Pasadena, CA, United States. ³Dartmouth College, Hanover, NH, United States. ⁴
University of California Los Angeles, Los Angeles, CA, United States. ⁵Washington
University in St. Louis, St. Louis, MO, United States. ⁶Massachusetts Institute of
Technology, Cambridge, MA, United States. ⁷University of Colorado Boulder, Boulder,
CO, United States. ⁸New Mexico State Univ., Las Cruces, NM, United States. ⁹University of
Texas at Austin, Austin, TX, United States. ¹⁰University of Washington, Seattle, WA, United
States. ¹¹University of Michigan, Ann Arbor, MI, United States. ¹²Johnson Space Center,
Houston, TX, United States. ¹³Boston University, Boston, MA, United States.

TUE

212 Agency Night
Attendee Event 07:30 PM to 09:00 PM in Plaza ABC
Chair: Rosaly Lopes

WEDNESDAY

300 Exoplanets 5: System Architectures

Oral Session 08:30 AM to 10:05 AM in Plaza ABC

Chair: Hannah Jang-Condell & Hilke Schlichting

- 300.01 Hot Jupiter Spin-Orbit Misalignments As Consequences of Disk-Driven Migration**
Konstantin Batygin¹, Fred C. Adams²
¹Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, United States. ²University of Michigan, Ann Arbor, MI, United States.
- 300.02 Distribution of Spin-Orbit misalignments: disk-torquing is compatible with observations**
Aurelien Crida¹, Konstantin Batygin²
¹Univ. Nice sophia antipolis / Obs. Cote d'Azur, Nice, France. ²Harvard CfA, Cambridge, MA, United States.
- 300.03 The high multiplicity systems Gliese 667C and KOI 3158**
Christa L. Van Laerhoven¹, Daniel Fabrycky², Richard Greenberg¹
¹University of Arizona, Tucson, AZ, United States. ²University of Chicago, Chicago, IL, United States.
- 300.04 Putting the Chaos and Instability of the Terrestrial Planets in Context**
Nathan A. Kaib¹, Yoram Lithwick¹, Sean N. Raymond^{2,3}
¹CIERA, Northwestern University, Evanston, IL, United States. ²Univ. Bordeaux, Floirac, France. ³CNRS, Floirac, France.
- 300.05 In-situ Planet Formation: Implications for Planets near Resonances**
Renu Malhotra¹, Cristobal Petrovich², Scott Tremaine³
¹University of Arizona, Tucson, AZ, United States. ²Princeton University, Princeton, NJ, United States. ³Institute for Advanced Study, Princeton, NJ, United States.
- 300.06 Anomalies in the architectures of Kepler systems**
Jason H. Steffen¹
¹Northwestern University, Evanston, IL, United States.
Contributing teams: Kepler
- 300.07 Measuring the Masses and Radii of Sub-Neptunes with Transit Timing Variations.**
Daniel Jontof-Hutter¹, Jack J. Lissauer¹, Jason F. Rowe¹, Daniel Fabrycky²
¹NASA Ames Research Center, Moffett Field, CA, United States. ²University of Chicago, Chicago, IL, United States.
- 300.08 SMACK: A New Algorithm for Modeling Collisions and Dynamics of Planetesimals in Debris Disks**
Erika Nesvold¹, Marc J. Kuchner², Hanno Rein^{3,4}, Margaret Pan²
¹University of Maryland, Baltimore County, Baltimore, MD, United States. ²NASA Goddard Space Flight Center, Greenbelt, MD, United States. ³University of Toronto, Scarborough, Toronto, ON, Canada. ⁴Institute for Advanced Study, Princeton, NJ, United States.
- 300.09 Circumplanetary Debris Disks and Consequences of an Eccentric Fomalhaut b**
Daniel Tamayo¹, Joseph A. Burns¹
¹Cornell University, Ithaca, NY, United States.

301 Asteroids 5: Geophysics

Oral Session 08:30 AM to 10:05 AM in Plaza E

Chair: Daniel Scheeres & David Polishook

- WED
- 301.01 Using a Radar Shape Model to Interpret Spectral Observations of near-Earth Asteroid 4179 Toutatis**
Ellen S. Howell¹, Michael W. Busch², Vishnu Reddy³, Ronald J. Vervack⁴, Michael C. Nolan¹, Christopher Magri⁵, Yanga R. Fernandez⁶, Patrick A. Taylor¹, Alessondra Springmann¹, Juan A. Sanchez⁷, Daniel J. Scheeres⁸, Yu Takahashi⁸
¹NAIC, Arecibo Observatory, Arecibo, Puerto Rico, United States. ²NRAO, Socorro, NM, United States. ³PSI, Tucson, AZ, United States. ⁴JHU/APL, Columbia, MD, United States. ⁵U. Maine at Farmington, Farmington, ME, United States. ⁶U. Central Florida, Orlando, FL, United States. ⁷MPI, Karlenburg-Lindau, Germany. ⁸U. Colorado, Boulder, CO, United States.

301.02 Rotation Induced Disruption of Cohesive Asteroids
Diego Sanchez Lana¹, Daniel J. Scheeres¹
¹University of Colorado at Boulder, Boulder, CO, United States.

301.03 The Effect of Rotation on Mass Loss in Simulations of Rubble-Pile Collisions
Ronald Ballouz¹, Derek C. Richardson¹, Patrick Michel², Steve Schwartz¹
¹Astronomy, University of Maryland College Park, College Park, MD, United States. ²University of Nice-Sophia Antipolis, Nice, Provence-Alpes-Côte d'Azur, France.

301.04 Hill Slope Failure as a Mechanism to Resurface Asteroids During Planetary Flybys
James Keane¹, Isamu Matsuyama¹
¹University of Arizona, Tucson, AZ, United States.

301.05 Global Landslides on Rapidly Spinning Spheroids
Daniel J. Scheeres¹, Paul Sanchez¹
¹University of Colorado, Boulder, CO, United States.

301.06 Lutetia's lineaments
Sebastien Besse¹, Michael Kuppers², Johannes Benkhoff¹, Olivier Barnouin³
¹ESTEC/ESA, Noordwijk, Netherlands. ²ESAC/ESA, Villanueva de la Canada, Spain. ³John Hopkins Applied Physics Laboratory, Laurel, MD, United States.

301.07 Small asteroids – rubble piles or boulders?
Alan W. Harris¹
¹MoreData!, La Canada, CA, United States.

301.08 Effects of YORP-induced rotational fission on the small size end of the Main Belt asteroid size distribution.
Alessandro Rossi¹, Seth Jacobson², Francesco Marzari³, Dan Scheeres⁴, Donald R. Davis⁵
¹IFAC-CNR, Firenze, Italy. ²Observatoire de la Côte d'Azur, CNRS, Nice, France. ³Dipartimento di Fisica e Astronomia, Padova, Italy. ⁴Dept. of Aerospace Engineering Sciences, Univ. of Colorado Boulder, Boulder, CO, United States. ⁵Planetary Science Institute, Tucson, AZ, United States.

301.09 Asteroid failure modes due to YORP spin-up: A survey
Masatoshi Hirabayashi¹, Daniel J. Scheeres¹
¹University of Colorado at Boulder, Boulder, CO, United States.

302 Titan 2: Ground Down

Oral Session 08:30 AM to 10:05 AM in Plaza F

Chair: Athena Coustenis & Juan Lora

- 302.01 A Late Major Merger at Saturn: Consequences for Titan and Iapetus**
Douglas P. Hamilton¹
¹Univ. of Maryland, College Park, MD, United States.
- 302.02 Interior Models for Saturn's Moon Titan Consistent with Cassini Observations**
Julie Castillo-Rogez¹
¹JPL/CalTech, Pasadena, CA, United States.
- 302.03 Infrared Study of Liquid / Solid Hydrocarbons and their Mixtures under Titan Conditions**
Sandeep Singh¹, Vincent Chevrier¹, Larry Roe¹, Adrienn Luspay-Kuti¹, Amanda Wagner¹
¹University of Arkansas, Fayetteville, AR, United States.
- 302.04 Evidence of Titan's Climate History from Evaporite Distribution**
Shannon MacKenzie¹, Jason W. Barnes¹, Robert Brown², Christophe Sotin², Bonnie J. Buratti³, Roger Clark⁴, Kevin H. Baines⁵, Phillip D. Nicholson⁶, Stephane Le Mouelic⁷, Sebastien Rodriguez⁸
¹University of Idaho, Moscow, ID, United States. ²Lunar and Planetary Laboratory University of Arizona, Tucson, AZ, United States. ³Jet Propulsion Laboratory California Institute of Technology, Pasadena, CA, United States. ⁴U.S. Geological Survey, Denver, CO, United States. ⁵Space Science and Engineering Center University of Wisconsin-Madison, Madison, WI, United States. ⁶Cornell University, Ithaca, NY, United States. ⁷Laboratoire de Planetologie et Geodynamique Universite de Nantes, Nantes, France. ⁸Laboratoire AIM Paris Diderot University, Paris, France.
- 302.05 Titan's dry lakebeds chemical composition and lakes formation time-scale**
Daniel Cordier¹, Jason Barnes², Abel Ferreira³, Thomas Cornet⁴
¹Institut UITNAM, Besançon, Franche-Comté, France. ²Department of Physics, University of Idaho, Engineering-Physics Building, Moscow, ID, United States. ³Departamento de Engenharia Química, Universidade de Coimbra, Coimbra, Portugal. ⁴Université de Nantes, Nantes, France.
- 302.06 Titan's "blandlands": nature, distribution, and possible origin of Titan's plains**
Rosaly M. Lopes¹, Michael J. Malaska¹, Alice Le Gall², Alexander Hayes³, Karl L. Mitchell¹, Randolph Kirk⁴, Jani Radebaugh⁵, Catherine Neish⁶, Ellen Stofan⁷, Michael Janssen¹, Steven D. Wall¹, Antoine Lucas⁸, Ralph D. Lorenz⁹
¹JPL, Pasadena, CA, United States. ²LATMOS, Université Versailles Saint Quentin, Guyancourt, France. ³Cornell University, Ithaca, NY, United States. ⁴USGS, Flagstaff, AZ, United States. ⁵Brigham Young University, Provo, UT, United States. ⁶NASA GSFC, Greenbelt, MD, United States. ⁷Proxemy Research, Laytonsville, MD, United States. ⁸Laboratoire AIM, Université Paris-Diderot-CEA-Saclay, Gif sur Yvette, France. ⁹Johns Hopkins University APL, Laurel, MD, United States.
- Contributing teams: Cassini RADAR Team**
- 302.07 Elevation Distribution of Titan's Craters Suggests Extensive Wetlands**
Catherine Neish¹, Ralph Lorenz²
¹The Florida Institute of Technology, Melbourne, FL, United States. ²The Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States.
- 302.08 Volcanic Destabilisation of Methane Clathrate Hydrate on Titan: the Mechanism for Resupplying Atmospheric CH₄?**
Ashley Davies¹, Christophe Sotin¹, Mathieu Choukroun¹, Dennis L. Matson¹, Torrence V. Johnson¹
¹Jet Propulsion Laboratory - California Institute of Technology, Pasadena, CA, United States.

- 302.09 Temporal Variations of Titan's Surface Regions with Cassini/VIMS**
Anezina Solomonidou^{1,2}, Athena Coustenis¹, Mathieu Hirtzig^{3,1},
Sebastien Rodriguez⁴, Katrin Stephan⁵, Stephane Le Mouélic⁶, Pierre Drossart¹,
Emmanuel Bratsolis⁷, Ralf Jaumann⁵, Rosaly M. Lopes⁸, Konstantinos Kyriakopoulos²,
Christophe Sotin^{8,6}, Robert H. Brown⁹
¹LESIA - Observatoire de Paris, Paris, France. ²Department of Geology & Geoenvironment
-University of Athens, Athens, Greece. ³Fondation "La main à la pâte", Paris, France. ⁴
Laboratoire AIM, Université Paris Diderot, Paris ⁷CNRS/CEA-Saclay, DSM/IRFU/SAP,
Paris, France. ⁵DLR, Institute of Planetary Research, Berlin, Germany. ⁶Laboratoire de
Planétologie et Géodynamique - Université de Nantes, Nantes, France. ⁷Department of
Physics - University of Athens, Athens, Greece. ⁸Jet Propulsion Laboratory, Pasadena,
CA, United States. ⁹Lunar and Planetary Laboratory - University of Arizona, Tucson, AZ,
United States.

303 Pluto 1

Oral Session 10:30 AM to 12:00 PM in Plaza ABC

Chair: Marc Buie & William Grundy

- 303.01 Heterogeneous and Evolving Distributions of Pluto's Volatile Surface Ices**
William M. Grundy¹, Cathy B. Olkin², Leslie A. Young², Marc W. Buie², Eliot F. Young²
¹Lowell Obs., Flagstaff, AZ, United States. ²Southwest Research Inst., Boulder, CO, United
States.
- 303.02 Interpreting the Shifted CH₄ Spectra of Pluto and Triton**
Laurence M. Trafton¹
¹Univ. of Texas, Austin, Austin, TX, United States.
- 303.03 Absorption Coefficients of the Methane-Nitrogen Binary Ice System: Implications for Pluto**
Silvia Protopapa¹, Will Grundy², Stephen Tegler³, Justin Bergonio⁴,
Hermann Boehnhardt⁵, Luis Barrera⁶
¹University of Maryland, Department of Astronomy, College Park, MD, United States. ²
Lowell Observatory, Flagstaff, AZ, United States. ³Department of Physics and Astronomy,
Northern Arizona University, Flagstaff, AZ, United States. ⁴Department of Physics and
Astronomy, University of Hawai'i, Manoa Honolulu, HI, United States. ⁵Max-Planck
Institute for Solar System Research, Katlenburg-Lindau, Germany. ⁶Universidad
Metropolitana de Ciencias de la Educacion, Santiago, Chile.
- 303.04 FUV Studies of Pluto and Its Satellites: From HST to New Horizons**
Eric Schindhelm¹, Alan Stern¹, Randy Gladstone¹
¹Southwest Research Institute, Boulder, CO, United States.
- 303.05 Satellite formation around Pluto-Charon**
Benjamin C. Bromley¹, Scott J. Kenyon²
¹University of Utah, Salt Lake City, UT, United States. ²Smithsonian Astrophysical
Observatory, Cambridge, MA, United States.
- 303.06 Cometary Impacts Produce Transient Atmospheres on Charon**
S. A. Stern¹, Randal Gladstone²
¹SwRI, Longmont, CO, United States. ²Southwest Research Institute, San Antonio, TX,
United States.
- 303.07 Ejecta Transfer within the Pluto System**
Simon Porter¹, William Grundy¹
¹Lowell Observatory, Flagstaff, AZ, United States.

- 303.08 Ground and space-based separate PSF photometry of Pluto and Charon from New Horizons and Magellan.**
Amanda M. Zangari^{1,2}, S. A. Stern¹, Leslie A. Young¹, Harold A. Weaver³, Cathy Olkin¹, Bonnie J. Buratti⁴, John Spencer¹, Kimberly Ennico⁵
¹SwRI, Boulder, CO, United States. ²MIT, Cambridge, MA, United States. ³JHU-APL, Laurel, MD, United States. ⁴JPL, Pasadena, CA, United States. ⁵NASA-Ames, Moffat Field, CA, United States.

304 Asteroids 6: Spin, Size, Shape

Oral Session 10:30 AM to 12:05 PM in Plaza E

Chair: David Trilling & Heather Kaluna

- 304.01 Thermal Lightcurves of 1999 JU3, Target of Hayabusa 2, Using Warm Spitzer**
Michael Mueller¹, Josh Emery², Andy Rivkin³, David Trilling⁴, Joe Hora⁵, Marco Delbo⁶, Seiji Sugita⁷, Sunao Hasegawa⁸, Masateru Ishiguro⁹, Young-Jun Choi¹⁰, Michael Mommert⁴
¹SRON, Groningen, Netherlands. ²University of Tennessee, Knoxville, TN, United States. ³JHU / APL, Baltimore, MD, United States. ⁴NAU, Flagstaff, AZ, United States. ⁵Harvard-Smithsonian, Cambridge, MA, United States. ⁶Observatoire de la Côte d'Azur, Nice, France. ⁷University of Tokyo, Tokyo, Japan. ⁸JAXA, Sagami-hara, Japan. ⁹Seoul National University, Seoul, Korea, Republic of. ¹⁰KASI, Daejeon, Korea, Republic of.
- 304.02 The Size Distribution of Very Small Near Earth Objects As Measured by Warm Spitzer**
David E. Trilling¹, Joe Hora², Brian Burt^{1,3}, Marco Delbo⁴, Joshua Emery⁵, Giovanni Fazio², Cesar Fuentes¹, Alan Harris⁶, Michael Mueller⁷, Michael Mommert^{1,6}, Howard Smith²
¹Northern Arizona University, Flagstaff, AZ, United States. ²Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, United States. ³Massachusetts Institute of Technology, Cambridge, MA, United States. ⁴Observatoire de la Côte d'Azur, Nice, France. ⁵University of Tennessee, Knoxville, TN, United States. ⁶German Aerospace Center (DLR), Berlin, Germany. ⁷Space Research Organization Netherlands (SRON), Groningen, Netherlands.
- 304.03 Ultra-Slow Rotating Outer Main Belt and Trojan Asteroids: Search for Binaries**
Keith S. Noll¹, Erin L. Ryan^{2,1}, William M. Grundy³, Susan D. Benecchi⁴
¹NASA/GSFC, Greenbelt, MD, United States. ²ORAU, Oak Ridge, TN, United States. ³Lowell Obs., Flagstaff, AZ, United States. ⁴CIW, DTM, Washington, DC, United States.
- 304.04 Direct Detection of YORP Spin-up on Asteroid (25143) Itokawa and Implications for its Internal Structure**
Stephen Lowry¹, Paul R. Weissman², Samuel R. Duddy¹, Benjamin Rozitis³, Alan Fitzsimmons⁴, Simon F. Green³, Michael D. Hicks², Colin Snodgrass⁵, Stephen D. Wolters², Steven R. Chesley², Jana Pittichová², Pieter van Oers⁶
¹University of Kent, Canterbury, United Kingdom. ²Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States. ³The Open University, Milton Keynes, United Kingdom. ⁴Queens University Belfast, Belfast, United Kingdom. ⁵Max Planck Institute for Solar System Research, Katlenburg-Lindau, Germany. ⁶Isaac Newton Group of Telescopes, Santa Cruz de la Palma, Spain.
- 304.05 New Asteroid Shape Models Derived from the Lowell Photometric Database**
Josef Durech¹, Josef Hanus¹, Radim Vanco², Dagmara Oszkiewicz³, Edward Bowell⁴
¹Astronomical Institute, Charles University in Prague, Prague, Czech Republic. ²Czech National Team, Ujezd u Brna, Czech Republic. ³Adam Mickiewicz University, Poznan, Poland. ⁴Lowell Observatory, Flagstaff, AZ, United States.
- 304.06 In Search of Fresh Material on Asteroid Pairs**
David Polishook¹, Nicholas Moskovitz¹, Richard P. Binzel¹, Francesca DeMeo¹, David Vokrouhlicky²
¹EAPS, MIT, Cambridge, MA, United States. ²Charles University, Prague, Czech Republic.

- 304.06 In Search of Fresh Material on Asteroid Pairs**
David Polishook¹, Nicholas Moskovitz¹, Richard P. Binzel¹, Francesca DeMeo¹, David Vokrouhlicky²
¹*EAPS, MIT, Cambridge, MA, United States.* ²*Charles University, Prague, Czech Republic.*
- 304.07 Asteroid Models from Sparse Photometry and Spin Vectors in Asteroid Families**
Josef Hanus¹, Josef Durech¹, Miroslav Broz¹
¹*Astronomical Institute, Faculty of Mathematics and Physics, Charles University in Prague, Prague, Czech Republic.*
- 304.08 Rotational properties of Maria asteroid family**
Myung-Jin Kim^{1,2}, Young-Jun Choi², Hong-Kyu Moon², Yong-Ik Byun¹, Noah Brosch³, Murat Kaplan⁴, Suleyman Kaynar⁴, Omer Uysal⁴, Eda Guzel⁵, Raoul Behrend⁶, Joh-Na Yoon⁷, Stefano Mottola⁸, Tobias C. Hinse², Zeki Eker⁴, Jang-Hyun Park²
¹*Department of Astronomy, Yonsei university, Seoul, Seodaemun-gu, Korea, Republic of.* ²*Korea Astronomy and Space Science Institute, Daejeon, Yuseong-gu, Korea, Republic of.* ³*Tel Aviv University, Tel Aviv, Israel.* ⁴*Akdeniz University, Antalya, Turkey.* ⁵*Ege University, Izmir, Turkey.* ⁶*Geneva Observatory, Geneva, Switzerland.* ⁷*Chungbuk National University Observatory, Jincheon, Korea, Republic of.* ⁸*DLR, Berlin, Germany.*

305 Titan 3: Air Out

Oral Session 10:30 AM to 12:00 PM in Plaza F

Chair: Julie Castillo-Rogez

- 305.01 In Situ Measurements of the Size and Density of Titan Aerosol Analogs**
Sarah Horst¹, Margaret A. Tolbert¹
¹*University of Colorado, Boulder, CO, United States.*
- 305.02 Revised tholin profile in the atmosphere of Titan**
Mao-Chang Liang¹, J. Kammer², X. Zhang³, D. Shemansky⁴, Y. Yung²
¹*Academia Sinica, Taipei, Taiwan.* ²*California Institute of Technology, Pasadena, CA, United States.* ³*University of Arizona, Tucson, AZ, United States.* ⁴*Space Environment Technologies, Pasadena, CA, United States.*
- 305.03 Post-Equinox Evolution of Titan's Detached Haze and South Polar Vortex Cloud**
Robert A. West¹, Aida Ovanessian¹, Anthony Del Genio², Elizabeth P. Turtle³, Jason Perry⁴, Alfred McEwen⁴, Trina Ray¹, Mou Roy¹
¹*JPL, Pasadena, CA, United States.* ²*Goddard Inst. For Space Studies, New York, NY, United States.* ³*Appl. Phys. Lab, Johns Hopkins Univ, Laurel, MD, United States.* ⁴*University of Arizona, Tucson, AZ, United States.*
- 305.04 The Vertical Composition of Titan's Atmosphere observed by VIMS/Cassini Solar Occultations**
Luca Maltagliati¹, Sandrine Vinatier¹, Bruno Bezard¹, Christophe Sotin², Bruno Sicardy¹, Philip D. Nicholson³, Matthew Hedman³, Roger N. Clark⁴, Robert H. Brown⁵
¹*LESIA, Observatoire de Paris, Meudon, France.* ²*JPL/Caltech, Pasadena, CA, United States.* ³*Cornell University, Ithaca, NY, United States.* ⁴*USGS, Denver, CO, United States.* ⁵*Arizona University, Tucson, AZ, United States.*
- 305.05 Titan's Seasonal North-South Asymmetry Separated into two Components**
Erich Karkoschka¹, Caitlin Griffith¹, Chuck See¹
¹*Univ. of Arizona, Tucson, AZ, United States.*

- 305.06 Seasonal variations in Titan's stratosphere observed with Cassini/CIRS: temperature, trace molecular gas and aerosol mixing ratio profiles**
Sandrine Vinatier¹, Bruno Bézard¹, Sébastien Lebonnois⁴, Nick Teanby², Rich Achterberg³, Pascal Rannou⁵
¹LESIA, Obs. de Paris-Meudon, Meudon, Cedex, France, France. ²School of Earth Sciences, University of Bristol, Bristol, United Kingdom. ³NASA/Goddard Space Flight Center, Greenbelt, MD, United States. ⁴Laboratoire de Météorologie Dynamique, UNiversité Paris ⁶Paris, France. ⁵Groupe de Spectroscopie Moléculaire et Atmosphérique, Université de Reims, Reims, France.
Contributing teams: CIRS Team
- 305.07 Observed Seasonal Change in Titan's Thermosphere**
Joseph H. Westlake¹, Hunter Waite², Jared M. Bell³, Rebecca Perryman²
¹John Hopkins Applied Physics Lab, Laurel, MD, United States. ²Southwest Research Institute, San Antonio, TX, United States. ³National Institute of Aerospace, Hampton, VA, United States.
- 305.08 Seasonal Evolution of Titan's Atmospheric Polar Vortices**
Nicholas A. Teanby¹, Patrick G. Irwin², Conor A. Nixon³, Remco de Kok⁴, Sandrine Vinatier⁵, Athena Coustenis⁵, Elliot Sefton-Nash^{6,1}, Simon B. Calcutt², F. M. Flasar³
¹School of Earth Sciences, University of Bristol, Bristol, United Kingdom. ²University of Oxford, Oxford, Oxfordshire, United Kingdom. ³NASA Goddard Space Flight Center, Greenbelt, MD, United States. ⁴SRON Netherlands Institute for Space Research, Utrecht, Netherlands. ⁵LESIA-Observatoire de Paris, Paris, France. ⁶University of California Los Angeles, Los Angeles, CA, United States.
- 305.09 Long-term chemical composition and temperature variations on Titan**
Athena Coustenis¹, Georgios Bampasidis^{1,2}, Richard Achterberg^{3,4}, Panayotis Lavvas⁵, Conor Nixon^{3,4}, Donald E. Jennings⁴, Nick Teanby⁶, Flasar F. Michael⁴, Glenn Orton⁷, Sandrine Vinatier¹, Ronald C. Carlson⁸
¹LESIA, Observatoire de Paris, Meudon, France. ²Faculty of Phys. National & Kapodistrian University of Athens, Athens, Greece. ³Department of Astronomy, Univ. of Maryland, Maryland, MD, United States. ⁴NASA/Goddard Flight Center, Greenbelt, MD, United States. ⁵GSMA, Univ. Reims, Reims, France. ⁶School Earth Sci., Univ. Bristol, Bristol, United Kingdom. ⁷JPL, Caltech, Pasadena, CA, United States. ⁸IACS, The Catholic University of America, Washington DC, WA, United States.

306 Sagan Medal (D. Yeomans); Urey Prize Lecture: From Pebbles to Planets, A. Johansen (Lund University)

Plenary Session 01:30 PM to 02:20 PM in Plaza ABC

Chair: Heidi Hammel

- 306.01 From Pebbles to Planets**
Anders Johansen¹
¹Lund University, Lund, Sweden.

307 Planets Orbiting M Dwarf Stars: The Most Characterizable Terrestrial Exoplanets are also the Most Abundant, P.S. Muirhead (Boston Univ.)

Plenary Session 02:20 PM to 02:55 PM in Plaza ABC

Chair: Linda Spilker & Joseph Harrington

- 307.01 Planets Orbiting M Dwarf Stars: The Most Characterizable Terrestrial Exoplanets are also the Most Abundant**
Philip S. Muirhead^{1,2}

¹Department of Astronomy, Boston University, Boston, MA, United States. ²Hubble Fellow, Boston, MA, United States.

308 Titan’s Spectacular Volte-Face, C.A. Griffith (Univ. Arizona)

Plenary Session 02:55 PM to 03:30 PM in Plaza ABC

Chair: Linda Spilker & Joseph Harrington

- 308.01 Titan’s Spectacular Volte-Face**
Caitlin A. Griffith¹

¹University of Arizona, Tucson, AZ, United States.

309 Titan Posters

Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall

Chair: Rosaly Lopes

- 309.01 Long-period librations of Titan**
Marie Yseboodt¹, Tim Van Hoolst¹

¹Royal Observatory of Belgium, Brussels, Belgium.

- 309.02 Effects of topography on the dune forming winds on Titan**
Erik J. Larson¹, Owen B. Toon¹, Andrew J. Friedson²

¹University of Colorado, Boulder, CO, United States. ²Jet Propulsion Laboratory, Pasadena, CA, United States.

- 309.03 Evaporation of Liquid Hydrocarbon Mixtures on Titan**
Adrienn Luspay-Kuti¹, Vincent F. Chevrier¹, Edgard G. Rivera-Valentin², Sandeep Singh¹, Larry A. Roe¹, Amanda Wagner¹

¹University of Arkansas, Fayetteville, AR, United States. ²Brown University, Providence, RI, United States.

- 309.04 Surface energy budget from a Titan GCM with realistic radiative transfer**
Juan M. Lora¹, Joellen Russell¹, Jonathan Lunine²

¹University of Arizona, Tucson, AZ, United States. ²Cornell University, Ithaca, NY, United States.

- 309.05 The Atmospheric Transmission and Surface Composition of Titan**
Roger N. Clark¹, N. Pearson¹, R. H. Brown², D. P. Cruikshank³, J. Barnes⁴, R. Jaumann⁵, L. Soderblom¹², C. Griffith², P. Rannou⁶, S. Rodriguez⁷, S. Le Mouelic⁸, J. Lunine⁹, C. Sotin¹⁰, K. H. Baines¹⁰, B. J. Buratti¹⁰, P. D. Nicholson⁹, R. M. Nelson¹¹, K. Stephan⁵

¹US Geological Survey, Denver, CO, United States. ²U. Arizona, Tucson, AZ, United States. ³NASA Ames, Moffett Field, CA, United States. ⁴U. Idaho, Moscow, ID, United States. ⁵DLR, Berlin, Germany. ⁶Université Reims, Reims, France. ⁷U. Paris, Paris, France. ⁸U. Nantes, Nantes, France. ⁹Cornell U., Ithaca, NY, United States. ¹⁰JPL, Pasadena, CA, United States. ¹¹PSI, Pasadena, CA, United States. ¹²US Geological Survey, Flagstaff, AZ, United States.

- 309.06 Ion Composition in Titan's Exosphere from the Cassini Plasma Spectrometer**
Adam K. Woodson¹, Robert E. Johnson¹
¹University of Virginia, Charlottesville, VA, United States.
- 309.07 Analyses of the gas and solid phases of Titan aerosol simulants produced in the COSmIC/THS experiment**
Ella Sciamma-O'Brien^{1,2}, Kate Upton³, Michel Nuevo^{1,4}, Jack L. Beauchamp³, Farid Salama¹
¹NASA Ames Research Center, Moffett Field, CA, United States. ²Bay Area Environmental Research Institute, Sonoma, CA, United States. ³Noyes Laboratory of Chemical Physics and the Beckman Institute - California Institute of Technology, Pasadena, CA, United States. ⁴SETI Institute, Mountain View, CA, United States.
- 309.08 The North South Asymmetry in Titan's Haze Through Time at Equinox**
Corbin J. Hennen¹, Jason W. Barnes¹, Ralph D. Lorenz², Robert H. Brown³, Christophe Sotin⁴, Bonnie J. Buratti⁴, Kevin H. Baines⁴, Roger N. Clark⁵, Philip D. Nicholson⁶
¹Department of Physics, University of Idaho, Moscow, ID, United States. ²Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States. ³Department of Planetary Sciences, University of Arizona, Tucson, AZ, United States. ⁴Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States. ⁵United States Geological Survey, Denver, CO, United States. ⁶Department of Astronomy, Cornell University, Ithaca, NY, United States.
- 309.09 New Results on Titan's Atmosphere and Surface from Huygens Probe Measurements**
Ralph Lorenz¹
¹JHU/APL, Laurel, MD, United States.
- 309.10 Titan 2D: Understanding Titan's Seasonal Atmospheric Cycles**
Michael Wong¹, Xi Zhang², Cheng Li¹, Renyu Hu³, Run-Lie Shia¹, Claire Newman⁴, Ingo Müller-Wodarg⁵, Yuk Yung¹
¹California Institute of Technology, Pasadena, CA, United States. ²University of Arizona, Tucson, AZ, United States. ³Massachusetts Institute of Technology, Cambridge, MA, United States. ⁴Ashima Research, Pasadena, CA, United States. ⁵Imperial College London, London, United Kingdom.

310 Pluto Posters

Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall

Chair: Amanda Bosh

- 310.01 Recent KBO (Pluto/Charon and beyond, including Quaoar) Occultation Observations by the Williams College Team as part of the Williams-MIT Collaboration**
Jay M. Pasachoff¹, Bryce A. Babcock¹, Allen B. Davis¹, Shubhanga Pandey¹, Muzhou Lu¹, Zeeve Rogosinski^{1,2}, Michael J. Person³, Amanda S. Bosh³, Amanda M. Zangari^{3,5}, Carlos A. Zuluaga³, Amanda A. S. Gulbis^{3,4}, Orlando Naranjo⁶, Giuliat Navas⁶, Libardo Zerpa⁶, Jorsely Villarreal⁶, Patricio Rojo⁷, Francisco Förster⁷, Elise Servajean⁷
¹Williams College, Williamstown, MA, United States. ²Wesleyan University, Middletown, CT, United States. ³MIT, Cambridge, MA, United States. ⁴SAAO, Cape Town, South Africa. ⁵SwRI, Boulder, CO, United States. ⁶U de Los Andes, Mérida, Venezuela, Bolivarian Republic of. ⁷U. Chile, Santiago, Chile.
- 310.02 Pluto: Global Modeling of 3-D Atmosphere-Surface Interactions**
Timothy I. Michaels¹
¹SETI Institute, Mountain View, CA, United States.

310.03 A peculiar stable region around Pluto**Rafael Sfair¹**, Silvia Maria Giuliani Winter¹, Othon C. Winter¹, Ernesto Vieira Neto¹¹UNESP - FEG, Guaratinguetá, SP, Brazil, Brazil.**310.04 Longitudinal Variation of Ethane Ice on the Surface of Pluto****Bryan J. Holler¹**, Catherine B. Olkin², Leslie A. Young², William M. Grundy³, Fran Bagenal¹¹Laboratory for Atmospheric and Space Physics, University of Colorado, Boulder, CO, United States. ²Southwest Research Institute, Boulder, CO, United States. ³Lowell Observatory, Flagstaff, AZ, United States.**310.05 A Database of Optical Constants for Ices and Non-Ices Expected on Pluto and its Satellites****Jake Olkin¹**¹Niwot High School, Niwot, CO, United States.**310.06 Mass Determination of Pluto and Charon from New Horizon REX Radio Science Observations****Martin Paetzold¹**, Thomas P. Andert², G. Leonard Tyler³, Michael K. Bird^{1,3}, David P. Hinson³, Ivan R. Linscott³¹Rheinisches Institut für Umweltforschung, Abteilung Planetenforschung (RIU-PF), an der Universität zu Köln, Cologne, Germany. ²Institut für Raumfahrttechnik und Weltraumnutzung, Universität der Bundeswehr München, Neubiberg, Germany. ³Department of Electrical Engineering, Stanford University, Stanford, CA, United States.**310.07 Atmospheric Escape from the Pluto/Charon System: Monte Carlo Simulations****Robert E. Johnson¹**, Orenthal J. Tucker², Leslie A. Young³¹Univ. of Virginia, Charlottesville, VA, United States. ²University of Michigan, Ann Arbor, MI, United States. ³Southwest Research Institute, Boulder, CO, United States.**310.08 Changes on Pluto's Surface Revealed with Long Timebase Photometry****Erin George¹**, Marc Buie²¹University of Colorado at Boulder, Boulder, CO, United States. ²Southwest Research Institute, Boulder, CO, United States.**311 Dust Posters****Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall****Chair: Adrienne Dove****311.01 Laboratory Investigation Of Dust Impacts On Antennas In Space****Zoltan Sternovsky^{1,2}**, David Malaspina¹, Eberhard Gruen¹, Keith Drake¹¹LASP, Univ. of Colorado, Boulder, CO, United States. ²Aerospace Eng. Sci. Department, Univ. of Colorado, Boulder, CO, United States.**311.02 Hypervelocity Dust Impacts in Space and the Laboratory**
Mihaly Horanyi¹¹Univ. of Colorado, Boulder, CO, United States.**Contributing teams: Colorado Center for Lunar Dust and Atmospheric Studies (CCLDAS) Team****311.03 Nano-Dust Analyzer For the Detection and Chemical Composition Measurement of Particles Originating in the Inner Heliosphere****Leela O'Brien¹**, Eberhard Gruen², Zoltan Sternovsky¹, Mihaly Horanyi¹, Antal Juhasz⁵, Moebius Eberhard³, Ralf Srama⁴¹University of Colorado, Boulder, CO, United States. ²Max Planck Institute for Nuclear Physics, Heidelberg, Germany. ³University of New Hampshire, Durham, NH, United States. ⁴University of Stuttgart, Stuttgart, Germany. ⁵KFKI Research Institute for Particle and Nuclear Physics, Budapest, Hungary.

- 311.04 Cratering Studies in Thin Plastic Films**
Anthony Shu^{1,3}, Sebastian Bugiel⁴, Eberhard Gruen^{3,4}, Mihaly Horanyi^{2,3},
 Tobin Munsat^{1,3}, Ralf Srama^{4,5}
¹Univ. Colo. Boulder, Boulder, CO, United States. ²LASP, Boulder, CO, United States. ³
 CCLDAS, Boulder, CO, United States. ⁴MPI-K, Heidelberg, Germany. ⁵IRS, Stuttgart,
 Germany.
Contributing teams: Colorado Center for Lunar Dust and Atmospheric Studies
- 311.05 Ejecta from Hypervelocity Dust Impacts Based on Light Flash Measurements**
Keith Drake¹, Zoltan Sternovsky¹, Mihály Horányi¹, Sascha Kempf¹, Ralf Srama^{2,3}
¹University of Colorado, Boulder, CO, United States. ²Max-Planck-Institut für Kernphysik,
 Heidelberg, Germany. ³Institut für Raumfahrtssysteme, Stuttgart, Germany.
- 311.06 Can Ring Dust Impacts Alter the Surfaces of the Mid-sized Saturnian Moons?**
Amara L. Graps¹, Anne Verbiscer², Paul Schenk³
¹Planetary Science Institute, Tucson, AZ, United States. ²Dept. of Astronomy, University
 of Virginia, Charlottesville, VA, United States. ³Lunar and Planetary Institute, Houston,
 TX, United States.
- 311.07 Modeling Solar Wind Mass-Loading Due to Cometary Dust**
Anthony Rasca¹, Mihaly Horanyi¹
¹Laboratory for Atmospheric and Space Physics, University of Colorado at Boulder,
 Boulder, CO, United States.

312 Jovian Planets Posters

Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall

Chair: Kunio Sayanagi & Erika Barth

- 312.01 Observations of Jovian Decametric Emission with the Long Wavelength Array Station 1**
Tracy E. Clarke¹, Jinjie Skarda², Chuck Higgins³, Ted Jaeger⁴, Kasu Imai⁵,
 Francisco Reyes⁶
¹Naval Research Lab., Washington, DC, United States. ²Stanford University, Stanford, CA,
 United States. ³MTSU, Murfreesboro, TN, United States. ⁴APL, Laurel, MD, United States. ⁵
 Kochi National College of Technology, Kochi, Kochi, Japan. ⁶University of Florida,
 Gainesville, FL, United States.
- 312.02 Infrared Emission Processes of Hydrocarbons in the Auroral Regions of Jupiter**
Sang J. Kim¹
¹Kyunghee Univ., Yongin, .
- 312.03 The ν_4 , ν_9 , ν_{10} and $\nu_6+\nu_{11}$ bands of 13CH₃-12CH₃ between 1245 and 1550 cm⁻¹**
Linda R. Brown¹, Carlo di Lauro², Franca Lattanzi², Arlan W. Mantz³,
 Mary Ann H. Smith⁴
¹Jet Propulsion Laboratory, Pasadena, CA, United States. ²Universita di Napoli Federico,
 Naples, Italy. ³Connecticut College, New London, CA, United States. ⁴NASA Langley
 Research Center, Hampton, VA, United States.
- 312.04 A behavior of the molecular absorption in Jupiter's atmosphere during the Southern Equatorial Belt fade between 2009 and 2011**
Victor G. Tejfel¹, Vladimir D. Vdovichenko¹, Galina A. Kirienko¹, Galina A. Kharitonova¹
¹Fessenkov Astrophysical Institute, Almaty, AB, Kazakhstan.
- 312.05 Optical Ground-Based Spectra of Jupiter and Saturn: An Exploration of Giant Planet Chromophores**
Nancy J. Chanover¹, Amy A. Simon-Miller², Reggie L. Hudson², Mark J. Loeffler²
¹New Mexico State Univ., Las Cruces, NM, United States. ²NASA Goddard Space Flight
 Center, Greenbelt, MD, United States.

312.06 Simulations of Wave Propagation in the Jovian Atmosphere after SL9 Impact Events

Csaba Palotai¹, Donald Korycansky², Joseph Harrington¹
¹University of Central Florida, Orlando, FL, United States. ²University of California at Santa Cruz, Santa Cruz, CA, United States.

312.07 Properties of Slowly Moving Thermal Waves in Saturn from Cassini CIRS and Ground-Based Thermal Observations from 2003 to 2009

Glenn S. Orton¹, Leigh N. Fletcher², F. Michael Flasar³, Richard K. Achterberg⁴, Padma A. Yanamandra-Fisher⁵, Matthew Lewis⁶, Takuya Fujiyoshi⁷, Jordan Bell⁸, John Christian⁹, Sarah K. Brown¹⁰
¹JPL, Pasadena, CA, United States. ²University of Oxford, Oxford, United Kingdom. ³NASA Goddard Space Flight Center, Greenbelt, MD, United States. ⁴University of Maryland, College Park, MD, United States. ⁵Space Science Institute, Boulder, CO, United States. ⁶University of Chicago, Chicago, IL, United States. ⁷Subaru Telescope, Hilo, HI, United States. ⁸Brown University, Providence, RI, United States. ⁹California Institute of Technology, Pasadena, CA, United States. ¹⁰Georgia Institute of Technology, Atlanta, GA, United States.

312.08 Cloud Mapping in the Upper Jupiter Troposphere from JIRAM/Juno Data: Preliminary Sensitivity Study

Alessandro Mura¹, Davide Grassi¹, Alberto Adriani¹
¹IAPS, Rome, Italy.

Contributing teams: JIRAM Team

312.09 The Polar Winds of Saturn as Determined by Cassini/VIMS: Seasonally Variable or Not?

Thomas W. Momary¹, Kevin H. Baines², Robert H. Brown³, Bonnie J. Buratti¹, Roger N. Clark⁴, Philip D. Nicholson⁵, Christophe Sotin¹
¹Jet Propulsion Laboratory/CalTech, Pasadena, CA, United States. ²Space Science & Engineering Center, University of Wisconsin, Madison, WI, United States. ³University of Arizona, Tucson, AZ, United States. ⁴U. S. Geological Survey, Denver, CO, United States. ⁵Cornell University, Ithaca, NY, United States.

Contributing teams: Cassini/VIMS Science Team

312.10 Zonal Wind Speeds, Vortex Characteristics, and Wave Dynamics in Saturn's Northern Hemisphere

John J. Blalock¹, Robert L. Draham^{1,2}, Janelle A. Holmes^{1,3}, Kunio M. Sayanagi¹
¹Hampton University, Hampton, VA, United States. ²Juniata College, Huntingdon, PA, United States. ³Howard University, Washington, DC, United States.

312.11 Temporal Evolution of Vortices with the 2010 Giant Storm on Saturn

Harold J. Trammell¹, Liming Li¹, Xun Jiang¹, Mark Smith¹, Ashwin Vasavada²
¹University of Houston, Houston, TX, United States. ²Jep Propulsion Lab, Pasadena, CA, United States.

312.12 Oxygen Compounds in Saturn's Stratosphere During the 2010 Northern Storm

Brigitte E. Hesman^{1,2}, Gordon L. Bjoraker², Richard K. Achterberg^{1,2}, Donald E. Jennings², Paul N. Romani², Leigh N. Fletcher³, Patrick G. Irwin³
¹Univ. Maryland, College Park, MD, United States. ²NASA GSFC, Greenbelt, MD, United States. ³University of Oxford, Oxford, United Kingdom.

312.13 Hydrocarbon and oxygen photochemistry on Uranus as revealed from Spitzer/IRS observations

Julianne I. Moses¹, Glenn S. Orton², Leigh N. Fletcher³, Amy K. Mainzer², Dean C. Hines⁴, Heidi B. Hammel⁵, Javier Martin-Torres⁶, Martin Burgdorf⁷, Cecile Merlet³, Michael R. Line⁸, Andrew Poppe⁹
¹Space Science Institute, Boulder, CO, United States. ²JPL, Pasadena, CA, United States. ³U. Oxford, Oxford, United Kingdom. ⁴STScI, Baltimore, MD, United States. ⁵AURA, Washington, DC, United States. ⁶CSIC-INTA, Madrid, Spain. ⁷HE Space Operations, Bremen, Germany. ⁸UC Santa Cruz, Santa Cruz, CA, United States. ⁹UC Berkeley, Berkeley, CA, United States.

- 312.14 The origin of CO in the stratosphere of Uranus**
Thibault Cavalié^{1,2}, Raphael Moreno³, Emmanuel Lellouch³, Paul Hartogh⁴, Olivia Venot⁵, Glenn S. Orton⁶, Christopher Jarchow⁴, Thérèse Encrenaz³, Franck Selsis^{1,2}, Franck Hersant^{1,2}, Leigh N. Fletcher⁷
¹Univ. Bordeaux, LAB, Floirac, France. ²CNRS, LAB, Floirac, France. ³LESIA, Obs. Paris, Meudon, France. ⁴Max Planck Institut für Sonnensystemforschung, Katelnburg-Lindau, Germany. ⁵Instituut voor Sterrenkunde, Katholieke Universiteit Leuven, Leuven, Belgium. ⁶JPL, Pasadena, CA, United States. ⁷Atmospheric, Oceanic and Planetary Physics, Clarendon Laboratory, University of Oxford, Oxford, United Kingdom.
- 312.15 Photochemistry in Saturn's Ring-Shadowed Atmosphere: Venetian Blinds, Atmospheric Molecules and Observations**
Scott G. Edgington¹, Sushil K. Atreya², Eric H. Wilson³, Kevin H. Baines^{1,4}, Robert A. West¹, Gordon L. Bjoraker⁵, Leigh N. Fletcher⁶, Tom Momary¹
¹Jet Propulsion Laboratory/CalTech, Pasadena, CA, United States. ²University of Michigan, Ann Arbor, MI, United States. ³Space Environment Technologies, Los Angeles, CO, United States. ⁴University of Wisconsin, Los Angeles, WI, United States. ⁵NASA Goddard Space Flight Center, Greenbelt, MD, United States. ⁶University of Oxford, Oxford, United Kingdom.
- 312.16 Atmospheric Variation on Saturn: From Voyager to Cassini**
Liming Li¹, Richard Achterberg², Barney Conrath³, Peter Gierasch³, Mark Smith¹, Amy Simon-Miller⁴, Conor Nixon⁴, Glenn Orton⁵, F. Flasar⁴, Xun Jiang¹, Kevin Baines⁵, Raul Morales-Juberias⁶, Andrew Ingersoll⁷, Ashwin Vasavada⁵, Anthony Del Genio⁸, Robert West⁵, Shawn Ewald⁷
¹University of Houston, Sugar Land, TX, United States. ²University of Maryland, College Park, MD, United States. ³Cornell University, Ithaca, NY, United States. ⁴NASA/GSFC, New York, NY, United States. ⁵Caltech/JPL, Pasadena, CA, United States. ⁶New Mexico Institute of Mining and Technology, Socorro, NM, United States. ⁷Caltech, Pasadena, CA, United States. ⁸NASA/GISS, New York, NY, United States.
Contributing teams: Cassini CIRS, ISS, and VIMS teams
- 312.17 The Long and Short of It: Saturn's Atmospheric Variability**
Padma A. Yanamandra-Fisher¹, Glenn S. Orton², Kevin H. Baines³, Thomas W. Momary²
¹Space Science Institute, Rancho Cucamonga, CA, United States. ²CIT/JPL, Pasadena, CA, United States. ³SSEC/Univ. of Wisc., Madison, WI, United States.
- 312.18 Uranus in 2012 from HST STIS: Methane depletion in north polar region indicates nonseasonal origin.**
Patrick M. Fry¹, Lawrence A. Sromovsky¹, Erich Karkoschka², Imke de Pater³, Kathy A. Rages⁴, Heidi B. Hammel⁵
¹Space Science & Engineering Center, University of Wisconsin, Madison, WI, United States. ²Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ, United States. ³University of California, Berkeley, CA, United States. ⁴SETI Institute, Mountain View, CA, United States. ⁵AURA, Washington, DC, United States.
- 312.19 Clouds, Hazes, and Rings: Keck Observations of Uranus**
Katherine R. de Kleer¹, Imke de Pater^{1,2}, Statia Luszcz-Cook⁴, Mate Adamkovics¹, Heidi Hammel^{3,5}, Patrick Fry⁶
¹UC Berkeley, Berkeley, CA, United States. ²Delft Institute of Earth Observation and Space Systems, Delft, Netherlands. ³Space Science Institute, Boulder, CO, United States. ⁴American Museum of Natural History, New York, NY, United States. ⁵Association of Universities for Research in Astronomy, Washington, D.C., DC, United States. ⁶University of Wisconsin - Madison, Madison, WI, United States.

- 312.20 Multi-wavelength Observations of Neptune's Atmosphere**
Imke de Pater¹, Leigh Fletcher², Statia Luszcz-Cook³, David deBoer¹, Bryan Butler⁴, Glenn Orton⁵, Michael Sitko⁶, Heidi Hammel⁷
¹UC, Berkeley, Berkeley, CA, United States. ²University of Oxford, Oxford, United Kingdom. ³American Museum of Natural History, New York, NY, United States. ⁴NRAO, Socorro, NM, United States. ⁵JPL, Pasadena, CA, United States. ⁶University of Cincinnati, Cincinnati, OH, United States. ⁷AURA, New York, NY, United States.
- 312.21 Chemical Abundances in Neptune's Troposphere as Determined from Microwave Observations**
James Norwood¹, Mark Hofstadter²
¹New Mexico State University, Las Cruces, NM, United States. ²Jet Propulsion Laboratory, Pasadena, CA, United States.
- 312.22 Atmospheric confinement of jet streams on Uranus and Neptune**
Yohai Kaspi¹, Adam P. Showman², William B. Hubbard², Oded Aharonson¹, Ravit Helled³
¹Earth and Planetary Sciences, Weizmann Institute of Science, Rehovot, Israel. ²University of Arizona, Tucson, AZ, United States. ³Tel Aviv University, Tel Aviv, Israel.
- 312.23 Inhibition of Diffusive Convection in the Water Condensation Zone of the Ice Giants**
Andrew J. Friedson¹
¹JPL, Pasadena, CA, United States.
- 312.24 Dynamic coupling of magnetic fields, thermal emissions, and zonal flows in ice giant planets**
Krista M. Soderlund¹, Moritz H. Heimpel², Eric M. King³, Jonathan M. Aurnou⁴
¹University of Texas Institute for Geophysics, Austin, TX, United States. ²University of Alberta, Edmonton, AB, Canada. ³University of California, Berkeley, Berkeley, CA, United States. ⁴University of California, Los Angeles, Los Angeles, CA, United States.
- 312.25 Observation of ion temperature anisotropy on the Io plasma torus using a high-dispersion spectrograph with an integral field unit**
Masato Kagitani¹
¹Planetary Plasma and Atmospheric Research Center, Tohoku University, Sendai, Miyagi, Japan, Japan.

313 Mars Posters

Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall

Chair: Alejandro Soto & David Kass

- 313.01 The Observed Gravity Field of Phobos and an Extrapolation of its Interior**
Tom P. Andert¹, Martin Pätzold², Bernd Häusler¹, Silvia Tellmann²
¹Institut für Raumfahrttechnik und Weltraumnutzung, Universität der Bundeswehr München, Munich, Germany. ²Rheinisches Institut für Umweltforschung, Abteilung Planetenforschung (RIU-PF), an der Universität zu Köln, Köln, Germany.
- 313.02 Mars Atmospheric Argon Isotopes Measured by the SAM Instrument Suite on MSL**
Heidi L. Manning¹, Michael H. Wong², Heather B. Franz³, Melissa Trainer³, Charles A. Malespin³, Eric Raaen³, Paul R. Mahaffy³, Sushil K. Atreya², John H. Jones⁵, Robert O. Pepin⁴, Rafael Navarro-Gonzalez⁶, Toby Owen⁷
¹Concordia College, Moorhead, MN, United States. ²University of Michigan, Ann Arbor, MI, United States. ³Goddard Space Flight Center, Green Belt, MD, United States. ⁴University of Minnesota, Minneapolis, MN, United States. ⁵Johnson Space Center, Houston, TX, United States. ⁶Universidad Nacional Autonoma de Mexico, Mexico City, Mexico. ⁷University of Hawaii, Honolulu, HI, United States.
Contributing teams: The MSL team

- 313.03 Early Evolved Gas Results from the Curiosity Rover's SAM Investigation at Gale Crater**
Paul R. Mahaffy¹, Heather Franz¹, Amy McAdam¹, Anna Brunner¹, Jen Eigenbrode¹, Jen Stern¹
¹NASA's GSFC, Greenbelt, MD, United States.
Contributing teams: SAM Science Team, MSL Science Team
- 313.04 Maps of [HDO]/[H₂O] near Mars' Aphelion**
Robert E. Novak¹, Michael J. Mumma², Geronimo L. Villanueva^{2,3}
¹Iona College, New Rochelle, NY, United States. ²NASA-Goddard Space Flight Center, Greenbelt, MD, United States. ³Catholic University, Washington, DC, United States.
- 313.05 Surface Reflectance Modeling for Martian Cloud Optical Depth Retrievals from CRISM Multispectral Image Cubes**
David R. Klassen¹
¹Rowan Univ., Glassboro, NJ, United States.
- 313.06 Timescales are short for the formation of water ice clouds on Mars**
Richard A. Urata¹, Robert M. Haberle¹, Melinda A. Kahre¹, Jeffery L. Hollingsworth¹
¹NASA Ames, Mountain View, CA, United States.
- 313.07 Martian dust aerosols and clouds in the North Polar summer: size and sedimentation**
Mark T. Lemmon¹, Emily Mason¹
¹Texas AandM University, College Station, TX, United States.
- 313.08 Martian dust aerosols in the North Polar summer: scattering properties and shape**
Emily Mason¹, Mark Lemmon¹
¹Texas A&M university, College Station, TX, United States.
- 313.09 Mesoscale Modeling of Water and Clouds in the Northern Martian Summertime**
Daniel Tyler¹, Jeffrey R. Barnes¹
¹Oregon State University, Corvallis, OR, United States.
- 313.10 The Effect of Limb Staring on Mars Climate Sounder Observations of Convective Instabilities**
Robert Edmonds¹, Jim Murphy¹, John Schofield², Nicholas Heavens³
¹New Mexico State University, Las Cruces, NM, United States. ²Jet Propulsion Laboratory, Pasadena, CA, United States. ³Hampton University, Hampton, VA, United States.
- 313.11 Coupling Mars' Dust And Water Cycles: Investigating The Effects Of Water Ice Cloud Formation On Dust Lifting And The Vertical Distribution Of Atmospheric Dust.**
Melinda A. Kahre¹, Jeffery L. Hollingsworth¹, Robert M. Haberle¹, Richard A. Urata²
¹NASA Ames Research Center, Moffett Field, CA, United States. ²NASA Ames Research Center / ORAU, Moffett Field, CA, United States.
- 313.12 Wave phenomena comparison between Mars and Titan upper atmospheres**
Meredith K. Elrod^{1,2}, Jared M. Bell²
¹University of Virginia, Newport News, VA, United States. ²National Institute of Aerospace, Hampton, VA, United States.
- 313.13 Semi-Stationary Waves Masquerading as Stationary Waves in the Martian Atmosphere**
Tamara McDunn¹, David Kass¹, Dan McCleese¹, Armin Kleinboehl¹, John T. Schofield¹
¹Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States.
Contributing teams: MCS Team

313.14 Seasonal Variations in the CO Line Profile and the Retrieved Thermal/Pressure Structures in the Atmosphere of Mars

Alain Khayat¹, Geronimo L. Villanueva^{2,4}, Michael J. Mumma², Timm E. Riesen^{1,3}, Alan T. Tokunaga¹

¹*Institute for Astronomy, UH Manoa, Honolulu, HI, United States.* ²*NASA Goddard Spaceflight Center, Greenbelt, MD, United States.* ³*NASA Astrobiology Institute, Honolulu, HI, United States.* ⁴*Catholic University of America, Washington, D.C., MD, United States.*

313.15 Analyzing HST observations of the Martian Corona with different modeling techniques

Dolon Bhattacharyya¹, John T. Clarke¹, Jean-Loup Bertaux², Jean-Yves Chaufray², Jordan Montgomery¹, Carl Schmidt³

¹*Astronomy, Boston University, Boston, MA, United States.* ²*LATMOS, Paris, France.* ³*University of Virginia, Charlottesville, VA, United States.*

313.16 Auroral current systems near Mars

David Brain¹, Sebastian Fischer², Keita Linden¹, Demet Ulusen³, Jasper Halekas⁴

¹*LASP / University of Colorado, Boulder, CO, United States.* ²*M.I.T., Boston, MA, United States.* ³*Space Technologies Research Institute, Ankara, Turkey.* ⁴*UC Berkeley, Berkeley, CA, United States.*

313.17 Unexpected Time-Variability of Martian Hydrogen Loss

Michael S. Chaffin¹, Jean Yves-Chaufray², Ian Stewart¹, Franck Montmessin², Nick Schneider¹

¹*University of Colorado, Boulder, CO, United States.* ²*LATMOS/IPSL, Guyancourt, Yvelines, Île-de-France, France.*

313.18 Thermal Effects from Comet 2013 A1 (Siding Spring) on Mars' Upper Atmosphere

Sarah J. Morrison¹, Roger Yelle¹

¹*Univ. of Arizona, Tucson, AZ, United States.*

313.19 Hot Carbon Corona in Mars' Upper Thermosphere and Exosphere

Yuni Lee¹, Michael Combi¹, Valeriy Tenishev¹, Stephen Bougher¹

¹*University of Michigan, Ann Arbor, MI, United States.*

313.20 Large-Scale, Synoptic-Period Weather Systems in Mars' Atmosphere

Jeffery L. Hollingsworth¹, Melinda Kahre¹

¹*NASA Ames Research Center, Moffett Field, CA, United States.*

313.21 Statistical studies on the sputtering responses preparing for the MAVEN mission

Yung-Ching Wang¹, Janet G. Luhmann¹, Francois Leblanc², Xiaohua Fang³, Ronan Modolo², Robert Lillis¹, Justin Deighan³, Robert E. Johnson⁴, Yingjuan Ma⁵, Wing-Huen Ip⁶

¹*Space Sciences Laboratory, University of California at Berkeley, Berkeley, CA, United States.* ²*LATMOS/IPSL-CNRS, Université Pierre et Marie Curie, Paris, France.* ³*Laboratory for Atmospheric and Space Physics, University of Colorado, Boulder, CO, United States.* ⁴*Department of Engineering Physics, University of Virginia, Charlottesville, VA, United States.* ⁵*Institute of Geophysics and Planetary Physics, University of California at Los Angeles, Los Angeles, CA, United States.* ⁶*Institute of Astronomy and Space Science, National Central University, Jhongli, Taiwan.*

313.22 The response of the Mars ionosphere to solar flares

Kathryn J. Fallows¹, Gabriel Gonzalez¹, Paul Withers¹, Zachary Girazian¹

¹*Boston Univ., Boston, MA, United States.*

313.23 Hot Oxygen Transport Model for Martian Coronal Retrievals with MAVEN's IUVS Instrument

Justin Deighan¹, Ian Stewart¹, Nick Schneider¹

¹*Laboratory for Atmospheric and Space Physics, Boulder, CO, United States.*

- 313.24 Ion Outflow At Mars Using MEX Ion And Electron Data**
Christopher M. Fowler¹, Laila Andersson¹, Rickard N. Lundin², Rudy A. Frahm³
¹LASP/CU, Boulder, CO, United States. ²IRF-UMEA, Umea, Sweden. ³SwRI, San Antonio, TX, United States.
- 313.25 Hot Oxygen in the Thermosphere of Mars**
Carol Carveth¹, John T. Clarke¹, Chaufray Jean-Yves², Jean-Loup Bertaux²
¹Boston Univ., Boston, MA, United States. ²LATMOS/IPSL, CNRS, Guyancourt, France.
- 313.26 Investigating the asymmetry of Mars' South Polar Cap using the NASA Ames Mars General Circulation Model with a CO₂ cloud microphysics scheme**
Julie Dequaire¹, Melinda A. Kahre², Robert M. Haberle², Jefferey L. Hollingsworth²
¹Universities Space Research Association, Mountain View, CA, United States. ²NASA Ames Research Center, Mountain View, CA, United States.
Contributing teams: NASA Ames Global Climate Modelling Group
- 313.27 Lava Tubes as Martian Analog sites on Hawaii Island**
Christian Andersen^{1,2}, John C. Hamilton^{1,2}, Melissa Adams²
¹Pacific International Space Center for Exploration Systems, Hilo, HI, United States.
²University of Hawaii - Hilo, Hilo, HI, United States.

THURSDAY

400 Mars 1: Surfaces

Oral Session 08:30 AM to 10:05 AM in Plaza ABC

Chair: Stephanie Getty & Jeffrey Moore

- 400.01 Disappearance of the Propontis Regional Dark Albedo Feature on Mars**
Steven W. Lee^{1,2}, Peter C. Thomas³, Bruce A. Cantor⁴
¹Denver Museum of Nature & Science, Denver, CO, United States. ²Space Science Institute, Boulder, CO, United States. ³Cornell University, Ithaca, NY, United States. ⁴Malin Space Science Systems, San Diego, CA, United States.
- 400.02 Characteristics and Origin of Martian Low-Aspect-Ratio Layered Ejecta (LARLE) Craters**
Nadine G. Barlow¹, Joseph M. Boyce²
¹Northern Arizona Univ., Flagstaff, AZ, United States. ²University of Hawaii, Honolulu, HI, United States.
- 400.03 Chemical Compositional Indications of Aqueous Alteration for Whitewater Lake Boxworks, Veneers and Veins at Cape York, Mars**
Benton Clark¹, R. Gellert², S. Squyres³, R. Arvidson⁴, A. Yen⁵, J. Rice⁶
¹Space Science Institute, Boulder, CO, United States. ²University of Guelph, Guelph, ON, Canada. ³Cornell Univ., Ithaca, NY, United States. ⁴Washington Univ., St. Louis, MO, United States. ⁵Jet Propulsion Laboratory, Pasadena, CA, United States. ⁶Planetary Science Institute, Tucson, AZ, United States.
Contributing teams: Athena Science Team
- 400.04 Deliquescence Of Calcium Perchlorate: An Investigation Of Stable Aqueous Solutions Relevant To Mars**
Danielle Nuding^{1,2}, Edgard G. Rivera-Valentin³, Raina V. Gough^{1,4}, Vincent F. Chevrier⁵, Margaret A. Tolbert^{1,4}
¹University of Colorado- CIRES, Boulder, CO, United States. ²University of Colorado- Dept. of Atmospheric and Oceanic Sciences, Boulder, CO, United States. ³Brown University - Dept of Geological Sciences, Providence, RI, United States. ⁴University of Colorado - Dept. of Chemistry, Boulder, CO, United States. ⁵University of Arkansas - CSAPS, Fayetteville, AR, United States.
- 400.05 The Radiolytic Destruction of Glycine Diluted in H2O and CO2 Ice: Implications for Mars and Other Planetary Environments**
Perry A. Gerakines¹, Reggie L. Hudson¹
¹NASA GSFC, Greenbelt, MD, United States.
- 400.06 Analysis of chlorocarbon compounds identified in the SAM Investigation of the Mars Science Laboratory mission**
Caroline Freissinet¹, Paul Mahaffy¹, Daniel Glavin¹, Arnaud Buch², Anna Brunner¹, Jennifer Eigenbrode¹, Mildred Martin¹, Kristen Miller⁵, Andrew Steele⁴, Cyril Szopa³
¹NASA GSFC, Greenbelt, MD, United States. ²Ecole Centrale Paris, Châtenay-Malabry, France. ³LATMOS, Guyancourt, France. ⁴Carnegie Institution of Washington, Washington DC, DC, United States. ⁵Massachusetts Institute of Technology, Cambridge, MA, United States.
Contributing teams: SAM and MSL science team

- 400.07 ChemCam Exploration of the rocks and soils of Gale Crater from “Rocknest” to “Yellow Knife Bay”**
Diana L. Blaney¹, Samuel M. Clegg², Ryan Anderson³, Roger Wiens², Sylvestre Maurice⁴, Olivier Gasnault⁴, Bruce Barraclough⁵, Gilles Berger⁴, John C. Bridges⁶, Nathan Bridges⁷, Ben Clark⁸, M. D. Dyar⁹, Lauren Edgar¹⁰, Bethany Ehlmann¹¹, Watler Goetz¹², Linda Kah¹³, Penny King^{14,15}, Nina Lanza², Morton Madsen¹⁶, S. LeMouelic¹⁷, N. Mangold¹⁷, P. Y. Meslin⁴, Horton Newsom¹⁸, Ann Ollila¹⁸, Scott Rowland¹⁹, Mariek Schmidt²⁰, Susanne Schröder⁴, Robert Tokar⁵
¹JPL/Caltech, Pasadena, CA, United States. ²LANL, Los Alamos, NM, United States. ³USGS, Flagstaff, AZ, United States. ⁴IRAP, Toulouse, France. ⁵PSI, Tucson, AZ, United States. ⁶U. Leicester, Leicester, United Kingdom. ⁷APL, Laurel, MD, United States. ⁸SSI, Boulder, CO, United States. ⁹Mt Holyoke, South Hadley, MA, United States. ¹⁰ASU, Tempe, AZ, United States. ¹¹Caltech, Pasadena, CA, United States. ¹²Max Planck, Katlenburg-Lindau, Germany. ¹³U. Tennessee, Knoxville, TN, United States. ¹⁴Australian National U., Sydney, NSW, Australia. ¹⁵U. of Guelph, Guelph, ON, Canada. ¹⁶U. Copenhagen, Copenhagen, Denmark. ¹⁷U. Nantes, Nantes, France. ¹⁸U. New Mexico, Albuquerque, NM, United States. ¹⁹U. Hawaii, Honolulu, HI, United States. ²⁰Brock U., St Catharines, ON, Canada.
Contributing teams: MSL Science Team
- 400.08 Composition and Physical Properties of Salt-Bearing Surfaces on Mars**
Timothy Glotch¹, Joshua Bandfield³, Michael Wolff², Jessica Arnold¹, Congcong Che¹, Yang Liu¹
¹Stony Brook University, Stony Brook, NY, United States. ²Space Science Institute, Milwaukee, WI, United States. ³Space Science Institute, Boise, ID, United States.
- 400.09 On Chlorine Salts: Their Detection, Stability and implications for Water on Mars and Europa**
Jennifer Hanley^{1,2}
¹Southwest Research Institute, Boulder, CO, United States. ²University of Arkansas, Fayetteville, AR, United States.

401 Asteroids 7: Searches

Oral Session 08:30 AM to 09:00 AM in Plaza E

Chair: Michael Busch

- 401.01 Finding and Characterizing Candidate Targets for the Asteroid Redirect Robotic Mission (ARRM)**
Paul Chodas¹, Robert Gershman¹
¹JPL, Pasadena, CA, United States.
- 401.02 The Pan-STARRS search for Near Earth Objects: recent progress and future plans**
Richard J. Wainscoat¹, Peter Veres¹, Bryce Bolin¹, Larry Denneau¹, Robert Jedicke¹, Marco Micheli¹, Serge Chastel¹
¹Univ. of Hawaii, Honolulu, HI, United States.
- 401.03 Minimoons Discovery with Ground-based Radar Facilities**
Bryce T. Bolin¹, Robert Jedicke¹, Mikael Granvik², Peter Brown³, Monique Chyba⁴, Ellen Howell⁵, Mike Nolan⁵, Geoff Patterson⁴, Richard Wainscoat¹
¹University of Hawaii, Institute for Astronomy, Honolulu, HI, United States. ²Department of Physics, University of Helsinki, Helsinki, Finland. ³University of Western Ontario, Physics & Astronomy Department, London, ON, Canada. ⁴University of Hawaii, Department of Mathematics, Honolulu, HI, United States. ⁵Arecibo Observatory, Arecibo, Puerto Rico, United States.

402 Dust

Oral Session 08:30 AM to 09:10 AM in Plaza F

Chair: Mihaly Horanyi & Elizabeth Jensen

- 402.01 Dust Measurements in the Outer Solar System by the Student Dust Counter**
Jamey Szalay¹, Mihaly Horanyi¹
¹University of Colorado Boulder, Boulder, CO, United States.
- 402.02 Composition of Exogenous Dust at Saturn from Cassini-CDA Mass Spectra**
Frank Postberg^{1,2}, Nicolas Altobelli³, Katherina Fiege¹, Jon K. Hillier¹, Sascha Kempf⁴, Ralf Srama², Mario Tieloff¹
¹Earth Science Institute, Heidelberg University, Heidelberg, Germany. ²Institut of Space Systems, Stuttgart University, Stuttgart, Germany. ³ESAC- ESA, Madrid, Spain. ⁴LASP, University of Colorado, Boulder, CO, United States.
- 402.03 Understanding Asteroid Disruptions Using Very Young Dust Bands**
Ashley J. Espy Kehoe¹, Thomas J. Kehoe², Joshua E. Colwell¹, Stanley F. Dermott³
¹University of Central Florida, Orlando, FL, United States. ²Florida Space Institute, Orlando, FL, United States. ³Univ. of Florida, Gainesville, FL, United States.
- 402.04 Dynamical Model for the Toroidal Source of the Sporadic Meteoroid Complex**
Petr Pokorný¹, David Vokrouhlický^{1,2}, Margaret Campbell-Brown³, David Nesvorný², Peter Brown³
¹Astronomical Institute, Charles University Prague, Prague, Czech Republic. ²Department of Space Studies, Southwest Research Institute, Boulder, CO, United States. ³Department of Physics and Astronomy, University of Western Ontario, London, ON, Canada.

403 Enceladus

Oral Session 09:00 AM to 10:00 AM in Plaza E

Chair: Paul Helfenstein & Dennis Matson

- 403.01 Self-Consistent Generation of Single-Plume State for Enceladus Using Non-Newtonian Rheology**
Jonathan Besserer¹, Antoine Rozel^{2,3}, Gregor J. Golabek³, Michael Kaplan⁴, Thorsten W. Becker⁴, Paul J. Tackley³
¹Department of Earth and Planetary Sciences, University of California, Santa Cruz, Santa Cruz, CA, United States. ²LET Laboratory of Experimental Tectonics, Dipartimento Scienze Geologiche, Università Roma TRE, Roma, Italy. ³Institute of Geophysics, Geophysical Fluid Dynamics, ETH Zurich, Zurich, Switzerland. ⁴Department of Earth Sciences, University of Southern California, Los Angeles, CA, United States.
- 403.02 Water-rock interactions in warm Enceladus inferred from silica formation and hydrothermal experiments**
Yasuhito Sekine¹, Takazo Shibuya², Frank Postberg^{3,4}, Hsiang-Wen Hsu⁵, Katsuhiko Suzuki², Yuka Masaki², Tatsu Kuwatani⁶, Shogo Tachibana⁷
¹Dept. Complexity Sci & Engr., The University of Tokyo, Kashiwa, Chiba, Japan. ²JAMSTEC, Yokosuka, Kanagawa, Japan. ³Universität Heidelberg, Heidelberg, Germany. ⁴Universität Stuttgart, Stuttgart, Germany. ⁵University of Colorado, Boulder, CO, United States. ⁶Tohoku University, Sendai, Japan. ⁷Hokkaido University, Sapporo, Japan.
- 403.03 A New Estimate of the Power Emitted by Enceladus' Tiger Stripes**
John R. Spencer¹, Carly J. Howett¹, Anne J. Verbiscer², Terry A. Hurford³, Marcia Segura³, Daniel C. Spencer⁴
¹SwRI, Boulder, CO, United States. ²U. Virginia, Charlottesville, VA, United States. ³GSFC, Greenbelt, MD, United States. ⁴Kenilworth School, Kenilworth, Warwicks., United Kingdom.

403.04 Baghdad Suchus on Enceladus: Constraints on the Temperature and Width at the Fissure Mouth

Jay D. Goguen¹, Bonnie J. Buratti¹, Robert H. Brown², Roger N. Clark³, Phillip D. Nicholson⁴, Matthew M. Hedman⁴, Christophe Sotin¹, Dale P. Cruikshank⁵, Kevin H. Baines¹

¹JPL, Pasadena, CA, United States. ²University of Arizona, Tucson, AZ, United States. ³USGS, Denver, CO, United States. ⁴Cornell U., Ithaca, NY, United States. ⁵NASA Ames Research Center, Moffett Field, CA, United States.

403.05 Modeling the Temporal Variability of the Enceladus Plume

Carolyn C. Porco¹, Francis Nimmo², Colin Mitchell¹

¹CICLOPS/Space Science Inst., Boulder, CO, United States. ²University of California, Earth and Planetary Sciences, Santa Cruz, CA, United States.

403.06 Enceladus' Emission at 2cm: an Anomaly Near the Equator?

Paul Ries¹, Michael Janssen¹

¹Jet Propulsion Laboratory, Pasadena, CA, United States.

404 Pluto 2: Atmosphere

Oral Session 09:10 AM to 10:05 AM in Plaza F

Chair: Catherine Olkin & Timothy Michaels

404.01 The State of Pluto's Atmosphere in 2012-2013

Amanda S. Bosh¹, M. J. Person¹, S. E. Levine², C. A. Zuluaga¹, A. M. Zangari^{1,15}, J. D. Ruprecht¹, R. Bowens-Rubin¹, T. C. Brothers¹, K. L. Berry¹, B. A. Babcock³, J. M. Pasachoff³, P. Rojo⁴, E. Servajean⁴, F. Förster⁴, O. A. Naranjo⁹, B. W. Taylor¹⁴, E. W. Dunham², T. Oswalt⁸, D. Batcheldor⁸, M. Murison⁵, T. Tilleman⁵, H. C. Harris⁵, L. P. Bright², G. Schaefer⁷, S. Sallum⁶, A. H. Midkiff¹⁰, E. A. Mailhot¹⁰, C. Miller¹¹, D. Morris¹³, R. Wodaski¹², D. Bell⁸, P. Bird⁸, D. Fey⁸, E. Geisert⁸, D. Hastings⁸, T. Mizusawa⁸, P. Solenski⁸, B. Watson⁸

¹MIT, Cambridge, MA, United States. ²Lowell Observatory, Flagstaff, AZ, United States. ³Williams College, Williamstown, MA, United States. ⁴Univ. Chile, Santiago, Chile. ⁵USNO-Flagstaff Station, Flagstaff, AZ, United States. ⁶Steward Observatory, Tucson, AZ, United States. ⁷CHARA/Georgia State Univ., Mt. Wilson, CA, United States. ⁸Florida Inst. Tech., Melbourne, FL, United States. ⁹Univ. de los Andes, Mérida, Venezuela, Bolivarian Republic of. ¹⁰SVH Observatory, Blairstown, NJ, United States. ¹¹NMSU, Las Cruces, NM, United States. ¹²Tzec Maun Fdn, Cloudcroft, NM, United States. ¹³Univ. Virgin Islands, St. Thomas, Virgin Islands, U.S.. ¹⁴Boston Univ., Boston, MA, United States. ¹⁵SwRI, Boulder, CO, United States.

404.02 The May 4, 2013 Stellar Occultation by Pluto and Implications for Pluto's Atmosphere

Catherine B. Olkin¹, L. A. Young¹, D. Borncamp¹, A. Pickles², B. Sicardy³, M. Assafin⁴, F. B. Bianco⁵, M. Buie¹, F. Colas³, A. Dias de Oliveira^{3,10}, M. Gillon⁶, R. G. French⁷, A. R. Gomes⁴, E. Jehin⁶, N. Morales⁸, C. Opitom⁶, J. L. Ortiz⁸, A. Maury⁹, M. Norbury², F. B. Ribas¹⁰, R. Smith¹¹, L. H. Wasserman¹², E. F. Young¹, M. Zacharias¹³, N. Zacharias¹³

¹SWRI, Boulder, CO, United States. ²Las Cumbres Observatory Global Telescope Network, Goleta, CA, United States. ³Observatoire de Paris, Meudon, France. ⁴Universidade Federal do Rio de Janeiro, Observatorio do Valongo, Rio de Janeiro, Brazil. ⁵Center for Cosmology and Particle Physics, New York University, New York, NY, United States. ⁶Institut d'Astrophysique de l'Université de Liège, Liège, Belgium. ⁷Wellesley College, Wellesley, MA, United States. ⁸Instituto de Astrofísica de Andalucía-CSIC, Granada, Spain. ⁹San Pedro de Atacama Celestial Explorations (S.P.A.C.E.), San Pedro de Atacama, Chile. ¹⁰Observatório Nacional / MCTI, Rio de Janeiro, Brazil. ¹¹Astrophysics Research Institute, Liverpool John Moores University, Liverpool, United Kingdom. ¹²Lowell Observatory, Flagstaff, AZ, United States. ¹³United States Naval Observatory, Washington, D. C., DC, United States.

- 404.03 Atmospheric CO on Pluto: Limits from Millimeter-wave Spectroscopy**
Mark A. Gurwell¹, Bryan Butler², Arielle Moullet³
¹Harvard-Smithsonian Center For Astrophysics, Cambridge, MA, United States. ²NRAO, Socorro, NM, United States. ³NRAO, Charlottesville, VA, United States.
- 404.04 The Effect of Surface Albedo on Pluto's Atmospheric Circulation**
Angela M. Zalucha¹, Tim I. Michaels¹, Scot Raffin²
¹SETI Institute, Mountain View, CA, United States. ²Southwest Research Institute, Boulder, CO, United States.
- 404.05 Hybrid model of Pluto's full atmosphere**
Justin Erwin^{1,2}, Robert E. Johnson¹, Darrell F. Strobel^{3,4}, Xun Zhu⁴
¹University of Virginia, Charlottesville, VA, United States. ²Lunar and Planetary Lab, University of Arizona, Tucson, AZ, United States. ³The Johns Hopkins University, Baltimore, MD, United States. ⁴The Johns Hopkins University Applied Physics Laboratory, Baltimore, MD, United States.

405 Mars 2: Surface and Atmospheric Composition

Oral Session 10:30 AM to 12:05 PM in Plaza ABC

Chair: Nadine Barlow & Timothy Glotch

- 405.01 The Full Seasonal/Global Variation of Mars Ozone from MARCI 2006-2013 Daily Global Mapping Retrievals**
R. T. Clancy¹, Michael J. Wolff¹, Franck Lefevre², Michael C. Malin³
¹Space Science Inst., Boulder, CO, United States. ²Laboratoire Atmospheres Milieux Observations Spatiales, Paris, France. ³Malin Space Science Systems, San Diego, CA, United States.
- 405.02 MSL/SAM Measurements of Nitrogen Isotopes in the Mars Atmosphere**
Michael H. Wong^{1,2}, Heather B. Franz³, Charles A. Malespin³, Melissa G. Trainer³, Sushil K. Atreya¹, Paul R. Mahaffy³, Jennifer C. Stern³, Christopher P. McKay⁴, Heidi L.K. Manning⁵, John H. Jones⁶, Tobias C. Owen⁷, Rafael Navarro-González⁸
¹University of Michigan, Ann Arbor, MI, United States. ²University of California, Berkeley, CA, United States. ³NASA GSFC, Greenbelt, MD, United States. ⁴NASA ARC, Moffett Field, CA, United States. ⁵Concordia College, Moorhead, MN, United States. ⁶NASA JSC, Houston, TX, United States. ⁷University of Hawaii, Honolulu, HI, United States. ⁸UNAM, Mexico City, Mexico.
Contributing teams: the MSL Team
- 405.03 Remotely Measured Boundary Layer Temperature and Carbon Dioxide Isotopes in Mars Atmosphere**
Theodor Kostiuk¹, Ramsey Smith¹, Tilak Hewagama², Timothy Livengood³, John Annen¹
¹NASA's GSFC, Greenbelt, MD, United States. ²UMD/GSFC, Greenbelt, MD, United States. ³CRESST/UMD/GSFC, Greenbelt, MD, United States.
- 405.04 Martian Atmospheric Plumes: Behavior, Detectability and Plume Tracing**
Don Banfield¹, Michael Mischna², R. Ian Sykes³, Richard Dissly⁴
¹Cornell Univ., Ithaca, NY, United States. ²JPL, Pasadena, CA, United States. ³Sage Management, Princeton, NJ, United States. ⁴Ball Aerospace, Boulder, CO, United States.
- 405.05 Material ejection through basal sublimation of the CO₂ ice on Mars: temporal evolution, thickness evolution and implications for Mars polar sedimentary records**
Cedric Pilorget¹, Christopher S. Edwards¹, Bethany L. Ehlmann¹, François Forget², Ehouarn Millour²
¹Geological and Planetary Science, California Institute of Technology, Pasadena, CA, United States. ²Laboratoire de Météorologie Dynamique, Paris, France.

- 405.06 Physical Properties of CO₂ Frost Formed by Radiative Cooling in a Mars Simulation Chamber**
Stephen Wood¹, Adam Bruckner¹, Gary Hansen¹, Carin Cornwall¹, Noel Kimber¹, Federico Alvarez¹
¹University of Washington, Seattle, WA, United States.
- 405.07 Resolving The Great Drying of Mars: Sequence Stratigraphy of The Aeolis-Zephyria Trough**
Edwin Kite¹, Antoine Lucas², Oded Aharonson^{1,3}
¹Caltech, GPS Division, Pasadena, CA, United States. ²Universite Paris-Diderot – CEA-Saclay/Paris⁷, Paris, France. ³Weizmann Institute for Science, Center for Planetary Science, Rehovot, Israel.
- 405.08 Constraints on the Compositions of Phobos and Deimos from Visible/Near Infrared Observations**
Abigail Fraeman¹, Scott Murchie², Roger Clark³, Richard Morris⁴, Raymond Arvidson¹, Andrew Rivkin², Faith Vilas⁵
¹Washington University in St. Louis, St Louis, MO, United States. ²Johns Hopkins Applied Physics Laboratory, Laurel, MD, United States. ³US Geological Survey, Denver, CO, United States. ⁴NASA Johnson Space Center, Houston, TX, United States. ⁵Planetary Science Institute, Tucson, AZ, United States.
- 405.09 The Martian Soil: A Planetary Gas Pump**
Caroline De Beule¹, Gerhard Wurm¹, Kelling Thorben¹, Markus Küpper¹, Tim Jankowski¹, Jens Teiser¹
¹University Duisburg-Essen, Duisburg, Germany.

406 Other Icy and Irregular Satellites

Oral Session 10:30 AM to 12:05 PM in Plaza E

Chair: Britney Schmidt & Amanda Hendrix

- 406.01 Possible Plasma Tori of Inert Kronian Satellites: Composition and Structure**
Aharon Eviatar¹, Raymond Goldstein², Hunter Waite²
¹Tel Aviv University, Ramat Aviv, Israel. ²Southwest Research Institute, San Antonio, TX, United States.
- 406.02 Far-Ultraviolet Phase Curve Analysis Of Mimas, Tethys And Dione And Implications For The Exogenic Processes**
Emilie M. Royer¹, Amanda R. Hendrix²
¹LASP, Boulder, CO, United States. ²PSI, Tucson, AZ, United States.
- 406.03 Coherent Backscattering Effect in Icy Satellites: Model, Cassini VIMS, and Ground-Based Near-Infrared Spectra**
Karly M. Pitman¹, Ludmilla Kolokolova², Anne J. Verbiscer³
¹Planetary Science Institute, Tucson, AZ, United States. ²University of Maryland, College Park, MD, United States. ³University of Virginia, Charlottesville, VA, United States.
- 406.04 The Opposition Surge of Icy Moons at 3.6 Microns: New Data from Cassini VIMS**
Bonnie J. Buratti¹, Paul A. Dalba¹, Roger N. Clark², Robert H. Brown³, Joel A. Mosher¹, Kevin H. Baines¹, Phillip D. Nicholson⁴
¹JPL, Pasadena, CA, United States. ²USGS, Denver, CO, United States. ³Univ. Arizona, Tucson, AZ, United States. ⁴Cornell Univ., Ithaca, NY, United States.
- 406.05 Rhea and Dione: Variations in Surface Thermal Properties**
Carly Howett¹, John Spencer¹, Verbiscer Anne²
¹SouthWest Research Institute, Boulder, CO, United States. ²University of Virginia, Charlottesville, VA, United States.

- 406.05 Rhea and Dione: Variations in Surface Thermal Properties**
Carly Howett¹, John Spencer¹, Verbisser Anne²
¹SouthWest Research Institute, Boulder, CO, United States. ²University of Virginia, Charlottesville, VA, United States.
- 406.06 Crater Relaxation and Heat Flow on Dione and Tethys: Near Cousins of Enceladus?**
Oliver White¹, Paul Schenk¹, Andrew Dombard²
¹Universities Space Research Association, Houston, TX, United States. ²University of Illinois at Chicago, Chicago, IL, United States.
- 406.07 The inner small satellites of Saturn: Their varied surfaces tell dynamic tales**
Peter C. Thomas¹, Paul Helfenstein¹, Joseph A. Burns¹
¹Cornell Univ., Ithaca, NY, United States.
- 406.08 Irregular Saturnian Moon Lightcurves from Cassini-ISS Observations: Update**
Tilmann Denk¹, Stefano Mottola²
¹Freie Universitat Berlin, Berlin, Germany. ²DLR, Berlin, Germany.
- 406.09 Capture of irregular satellites due to gas drag from circumplanetary disk**
Ryo Suetsugu¹, Tetsuya Fujita¹, Keiji Ohtsuki^{1,2}
¹Department of Earth and Planetary Sciences, Kobe university, Kobe, Japan. ²University of Colorado, Boulder, CO, United States.

407 Comets 1: ISON and Garradd

Oral Session 10:30 AM to 12:00 PM in Plaza F

Chair: Amy Lovell & Lucas Paganini

- 407.01 Sungrazing Comet Potpourri: Dust Studies of SOHO/STEREO Comets and an Update on ISON (C/2012 S1)**
Matthew M. Knight^{1,2}, David G. Schleicher¹, Jason Begun³, Michael S. Kelley³, Michael F. A'Hearn³, Karl Battams⁴
¹Lowell Observatory, Flagstaff, AZ, United States. ²JHU Applied Physics Laboratory, Laurel, MD, United States. ³University of Maryland, College Park, MD, United States. ⁴Naval Research Laboratory, Washington, DC, United States.
- 407.02 Early pre-perihelion characterization of Comet C/2012 S1 (ISON)**
Jian-Yang Li¹, Michael S. Kelley², Tony L. Farnham³, Michael F. A'Hearn², Matthew M. Knight³, Harold A. Weaver⁴, Max J. Mutchler⁵, Philippe Lamy⁶, Imre Toth⁷
¹Planetary Science Institute, Tucson, AZ, United States. ²University of Maryland, College Park, MD, United States. ³Lowell Observatory, Flagstaff, AZ, United States. ⁴Johns Hopkins University, Applied Physics Laboratory, Laurel, MD, United States. ⁵Space Telescope Science Institute, Baltimore, MD, United States. ⁶Laboratoire d'Astrophysique de Marseille, Marseille, France. ⁷Hungarian Academy of Sciences, Budapest, Hungary.
- 407.03 Development of Activity in Comet C/2012 S1 ISON**
Karen J. Meech^{1,2}, Bin Yang¹, Jacqueline V. Keane^{1,2}, Megan Ansdell¹, Timm E. Riesen^{1,2}, Jan Kleyna^{1,2}, Henry Hsieh¹, Stefano Mottola³, Ekkehard Kuehrt³, Hsin-Fang Chiang², Bo Reipurth^{1,2}, Giannantonio Milani⁴, Erik Bryssinck⁴, Peter Michaud⁵, Travis Rector⁶
¹University of Hawaii, Honolulu, HI, United States. ²NASA Astrobiology Institute, Honolulu, HI, United States. ³DLR-German Aerospace Center, Berlin, Germany. ⁴CARA Project, IASF INAF, Roma, Italy. ⁵Gemini Observatory, Hilo, HI, United States. ⁶Univ. Alaska, Anchorage, AK, United States.

- 407.04 The Early Inbound Activity of Comet ISON (C/2012 S1)**
Michael F. A'Hearn¹, Nicolas Biver², Dennis Bodewits¹, Tony L. Farnham¹,
 Lori M. Feaga¹, Paul D. Feldman³, Matthew M. Knight⁴, Laurence O'Rourke⁵,
 David G. Schleicher⁴, Harold A. Weaver⁶
¹University of Maryland, College Park, MD, United States. ²Observatoire de Paris,
 Meudon, France. ³The Johns Hopkins University, Baltimore, MD, United States. ⁴
 Lowell Observatory, Flagstaff, AZ, United States. ⁵European Space Astronomy Center,
 Villafranca, Spain. ⁶JHU Applied Physics Laboratory, Laurel, MD, United States.
- 407.05 Narrowband Observations of Comets ISON (2012 S1) and 2P/Encke: Extremes
 of the New and the Old**
David G. Schleicher¹, Matthew M. Knight¹, Allison N. Bair¹
¹Lowell Obs., Flagstaff, AZ, United States.
- 407.06 Observing Comet C/2012 S1 (ISON) With Spitzer**
Carey M. Lisse¹, Ron J. Vervack¹, Harold A. Weaver¹, James M. Bauer²,
 Yanga R. Fernandez³, Mike S. Kelley⁴, Matthew M. Knight⁵, Dean C. Hines⁶,
 Jian-Yang Li⁷, William T. Reach⁸, Mike L. Sitko⁹, Padma Yanamandra-Fisher¹⁰,
 Karen J. Meech¹¹, John T. Rayner¹¹
¹Johns Hopkins Univ., Laurel, MD, United States. ²JPL, Pasadena, CA, United States. ³UCF,
 Orlando, FL, United States. ⁴UMD, College Park, MD, United States. ⁵Lowell Observatory,
 Flagstaff, AZ, United States. ⁶STScI, Baltimore, MD, United States. ⁷PSI, Tucson, AZ,
 United States. ⁸USRA/SOFIA, Mountain View, CA, United States. ⁹University of Cincinnati,
 Cincinnati, OH, United States. ¹⁰SSI, Boulder, CO, United States. ¹¹UH, Manoa, HI, United
 States.
- 407.07 The Onset of Comet C/2012 S1 ISON's Volatile Activity as Observed by the Deep
 Impact HRI-IR Spectrometer**
Lori M. Feaga¹, Jessica M. Sunshine¹, Michael F. A'Hearn¹, Tony L. Farnham¹,
 Silvia Protopapa¹, Dennis D. Wellnitz¹, Kenneth P. Klaasen², Terry W. Himes²
¹Univ. of Maryland, College Park, MD, United States. ²JPL, Pasadena, CA, United States.
- 407.08 Imaging Comets ISON and Garradd With the Deep Impact Flyby Spacecraft**
Tony Farnham¹, Dennis Bodewits¹, Lori M. Feaga¹, Michael F. A'Hearn¹,
 Jessica M. Sunshine¹, Dennis D. Wellnitz¹, Kenneth P. Klaasen², Terry W. Himes²
¹Univ. of Maryland, College Park, MD, United States. ²Jet Propulsion Laboratory,
 Pasadena, CA, United States.
- 407.09 The evolving activity of the Dynamically Young Comet C/2009 P1 (Garradd)**
Dennis Bodewits¹, Tony L. Farnham¹, Mike F. A'Hearn¹, Lori M. Feaga¹, Adam McKay²,
 Dave G. Schleicher³, Jessica Sunshine¹
¹University of Maryland, Washington, MD, United States. ²New Mexico State University,
 Las Cruces, NM, United States. ³Lowell Observatory, Flagstaff, AZ, United States.

408 JWST Town Hall: Observations in the Solar System

Town Hall 12:00 PM to 01:00 PM in Plaza ABC

409 Masursky Award (R. Greeley); Eberhart Award (R. Kerr)

Plenary Session 01:30 PM to 01:45 PM in Plaza ABC

Chair: Heidi Hammel

410 Mars Science Laboratory: Findings and Highlights of the First year, S.K. Atreya (Univ. Michigan)

Plenary Session 01:45 PM to 02:20 PM in Plaza ABC

Chair: Candice Hansen & Scott Sheppard

410.01 Mars Science Laboratory: Findings and Highlights of the First year
Sushil K. Atreya¹

¹Univ. of Michigan, Ann Arbor, MI, United States.

Contributing teams: MSL Science Team

411 Voyager at the Edge of Interstellar Space, E.C. Stone (Caltech)

Plenary Session 02:55 PM to 03:30 PM in Plaza ABC

Chair: Candice Hansen & Scott Sheppard

411.01 Voyager at the Edge of Interstellar Space
Edward C. Stone¹

¹California Institute of Technology, Pasadena, CA, United States.

412 The Kuiper Belt after 20 years: Past, Present & Future, H. Schlichting (MIT)

Plenary Session 02:20 PM to 02:55 PM in Plaza ABC

Chair: Scott Sheppard & Candice Hansen

412.01 The Kuiper Belt after 20 years: Past, Present & Future
Hilke Schlichting¹

¹MIT, Cambridge, MA, United States.

413 Comets Posters

Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall

Chair: Matthew Knight & Rachel Stevenson

413.01 Rosetta – an update

Matt Taylor¹, Nicolas Altobelli², Fred Jansen^{1,2}, Michael Kueppers²,
Gerhard Schwehm¹, Claudia Alexander³, Maud Barthelemy², Bernhard Geiger²,
Richard Moissl², Claire Vallat², Bjoern Grieger², Albrecht Schmidt²

¹European Space Agency, ESTEC, Noordwijk, Netherlands. ²European Space Agency, ESAC, Madrid, Spain. ³NASA/JPL, Pasadena, CA, United States.

413.02 A radiative transfer model for simulating VIRTIS/Rosetta molecular spectra
Vincent Debout¹, Dominique Bockelee-Morvan¹, Vladimir Zhakarov¹

¹Planetology, LESIA, Meudon, France.

413.03 The VIS-IR mapping of 67P/Churyumov-Gerasimenko comet nucleus: the observation strategy of VIRTIS-M onboard Rosetta

Fabrizio Capaccioni¹, Gianrico Filacchione¹, Sergio Fonte¹, Mauro Ciarniello¹,
Andrea Raponi¹, Bernhard Geiger², Michael Kueppers², Claire Vaillat¹

¹Istituto di Astrofisica e Planetologia Spaziali, Rome, Rome, Italy. ²ESAC, Madrid, Spain.

- 413.04 Simulation of the radiance from a cometary nucleus coma. Application to Rosetta-VIRTIS observations of 67P Churyumov-Gerasimenko.**
Giovanna Rinaldi¹, Uwe Fink², Mauro Ciarniello¹, Gian Paolo Tozzi³, Fabrizio Capaccioni¹, Gianrico Filacchione¹, Maria Blecka⁴
¹IAPS-INAF, Roma, Italy. ²Lunar and Planetary Laboratory, Tucson, AZ, United States. ³INAF, Osservatorio Astrofisico di Arcetri, Firenze, Italy. ⁴pace Research Center PASi, Warsaw, Poland, Italy.
- 413.05 Sensitivity of MIRO continuum channels to thermophysical and dielectric properties in preparation of the Rosetta observations of 67P/Churyumov-Gerasimenko**
Mathieu Choukroun¹, Steve Keihm¹, Paul von Allmen¹, Seungwon Lee¹, Lucas Kamp¹, Samuel Gulkis¹, Mark Hofstadter¹, Michael Janssen¹
¹Jet Propulsion Laboratory, Pasadena, CA, United States.
- 413.06 Calibration of the Dust Impact Monitor DIM onboard Rosetta/Philae**
Harald Krueger¹, Alberto Flandes², Walter Arnold^{3,4}, Hans-Herbert Fischer⁵, Attila Hirn⁶, Alexander Loose¹, Klaus J. Seidensticker⁷, Matthias Sperl⁸
¹Planetary Research, Max-Planck-Institut fuer Sonnensystemforschung, Katlenburg-Lindau, Germany. ²Ciencias Especiales, Inst. de Geofisica, UNAM, Mexico, Mexico. ³Department of Materials, Saarland University, Saarbruecken, Germany. ^{4,1}Phys. Institut, University of Göttingen, Goettingen, Germany. ⁵DLR, Space Operations, MUSC, Koeln, Germany. ⁶MTA Centre for Energy Research, Budapest, Hungary. ⁷DLR, Institute for Planetary Research, Berlin, Germany. ⁸DLR, Institut für Materialphysik im Weltraum, Koeln, Germany.
- 413.07 Dust observations of comet 67P/Churyumov-Gerasimenko and comparison with ICES model.**
Gian-Paolo Tozzi¹, Maria Blecka², Fabrizio Capaccioni³, Sara Faggi¹, Gianrico Filacchione³, Uwe Fink⁴, Giovanna Rinaldi³
¹INAF - Osservatorio Astrofisico di Arcetri, Firenze, Italy. ²Space Research Center PAS, Warsaw, Poland. ³INAF - IAPS, Rome, Italy. ⁴LPL, Tucson, AZ, United States.
- 413.08 Dust Properties of Three Oort Cloud Comets and Comet 67P/Churyumov-Gerasimenko**
Michael S. Kelley¹, David E. Harker², Charles E. Woodward³, Michael L. Sikto⁴, Ray W. Russell⁵, Daryl L. Kim⁵, Diane H. Wooden⁶
¹Univ. of Maryland, College Park, MD, United States. ²UCSD/CASS, San Diego, CA, United States. ³Univ. of Minnesota, Minneapolis, MN, United States. ⁴Space Science Inst., Boulder, CO, United States. ⁵The Aerospace Corp., Los Angeles, CA, United States. ⁶NASA Ames Research Center, Moffett Field, CA, United States.
- 413.09 Ultraviolet Observations Of C/2012 S1 (ISON) By MAVEN**
Matteo Crismani¹, Nick Schneider¹, Ian Stewart¹, Michael Combi², Nicolas Fougere²
¹Laboratory for Atmospheric and Space Sciences, University of Colorado, Boulder, CO, United States. ²Department of Atmospheric, Oceanic and Space Sciences, University of Michigan, Ann Arbor, MI, United States.
- 413.10 Hubble Space Telescope Pre-Perihelion ACS/WFC Imaging Polarimetry of Comet ISON (C/2012 S1) at 3.81 AU**
Dean C. Hines^{1,2}, Gorden Videen^{3,2}, Evgenij Zubko⁴, Karri Muinonen⁴, Yuriy Shkuratov⁵, Vadym Kaydash⁵, Matthew M. Knight⁶, Michael L. Sitko^{7,2}, Carey M. Lisse⁸, Max Mutchler¹, Derek M. Hammer¹
¹Space Telescope Science Institute, Baltimore, MD, United States. ²Space Science Institute, Boulder, CO, United States. ³U.S. Army Research Laboratory, Adelphi, MD, United States. ⁴University of Helsinki, Helsinki, Finland. ⁵Kharkov National University, Kharkov, Ukraine. ⁶Lowell Observatory, Flagstaff, AZ, United States. ⁷University of Cincinnati, Cincinnati, OH, United States. ⁸Applied Physics Laboratory, Laurel, MD, United States.

413.11 A cometary update from the WISE mission

Rachel Stevenson¹, James M. Bauer^{1,4}, Emily A. Kramer², Amy K. Mainzer¹, Joseph R. Masiero¹, Tommy Grav³, Yan R. Fernandez²

¹Jet Propulsion Laboratory, Pasadena, CA, United States. ²University of Central Florida, Orlando, FL, United States. ³Planetary Science Institute, Tucson, AZ, United States. ⁴Infrared Processing and Analysis Center, Caltech, Pasadena, CA, United States.

Contributing teams: WISE Team

413.12 WISE/NEOWISE Observations of WISE/NEOWISE-discovered Cometary Dust Tails

Emily A. Kramer¹, Yanga R. Fernandez¹, James M. Bauer², Rachel A. Stevenson², Amy K. Mainzer², Tommy Grav³, Joseph Masiero², Russell G. Walker⁴, Carey M. Lisse⁵

¹University of Central Florida, Orlando, FL, United States. ²Jet Propulsion Laboratory, Pasadena, CA, United States. ³Planetary Science Institute, Tucson, AZ, United States. ⁴Monterey Institute for Research in Astronomy, Monterey, CA, United States. ⁵Applied Physics Laboratory, Johns Hopkins University, Laurel, MD, United States.

Contributing teams: The WISE Team

413.13 Where are the small Kreutz-family members?

Quanzhi Ye¹, Paul Wiegert¹, Man-To Hui², Rainer Krach³

¹The University of Western Ontario, London, ON, Canada. ², Guangzhou, China. ³, Elmshorn, Germany.

413.14 Manifestations of Cometary Activity

Nalin H. Samarasinha¹, Beatrice Mueller¹, Tony L. Farnham²

¹Planetary Science Institute, Tucson, AZ, United States. ²University of Maryland, College Park, MD, United States.

413.15 Repeatability of the Dust and Gas Morphological Structures in the Coma of Comet Cassandra Lejoly^{1,2}, Nalin H. Samarasinha¹, Lujendra Ojha¹, David G. Schleicher³

¹Planetary Science Institute, Tucson, AZ, United States. ²University of Arizona, Tucson, AZ, United States. ³Lowell Observatory, Flagstaff, AZ, United States.

413.16 PRE- AND POST-PERHELION OBSERVATIONS OF C/2009 P1 (GARRADD): EVIDENCE FOR AN OXYGEN-RICH HERITAGE?

Michael A. DiSanti^{1,2}, Geronimo L. Villanueva^{1,3}, Lucas Paganini^{1,3}, Boncho P. Bonev^{1,3}, Jacqueline V. Keane⁴, Karen J. Meech⁴, Michael J. Mumma^{1,2}

¹Goddard Center for Astrobiology (GCA), Greenbelt, MD, United States. ²NASA - GSFC, Greenbelt, MD, United States. ³Catholic University of America, Washington, DC, United States. ⁴University of Hawaii, National Astrobiology Institute, Honolulu, HI, United States.

413.17 Revealing the Volatile Abundances in Comet C/2012 F6 (Lemmon) From Ground-based Observations

Stefanie N. Milam^{1,2}, Adeline Gicquel^{1,2}, Martin A. Cordiner^{1,2}, Geronimo L. Villanueva^{1,2}, Anthony J. Remijan³, Nicolas Biver⁴, Dominique Bockelee-Morvan⁴, Steven B. Charnley¹

¹NASA Goddard Space Flight Center, Greenbelt, MD, United States. ²Catholic University of America, Washington, DC, United States. ³National Radio Astronomy Observatory, Charlottesville, VA, United States. ⁴Observatoire de Paris-Meudon, Meudon, Meudon, France.

413.18 Ethane (C₂H₆), Methane (CH₄), and Carbon Monoxide (CO) in the Coma of Comet C/2006 W3 (Christensen) Beyond 3.2 AU from the Sun

Boncho P. Bonev¹, Michael J. Mumma², Geronimo L. Villanueva¹, Michael A. DiSanti², Hermann Bönnhardt³, Lucas Paganini¹, Manuela Lippi³, Erika L. Gibb⁴

¹Catholic University of America / Goddard Center for Astrobiology, Greenbelt, MD, United States. ²NASA Goddard Space Flight Center / Goddard Center for Astrobiology, Greenbelt, MD, United States. ³Max-Planck Institute for Solar System Research, Katlenburg-Lindau, N/A, Germany. ⁴University of Missouri - St. Louis / Goddard Center for Astrobiology, Saint Louis, MO, United States.

- 413.19 Radio OH observations of Comet C/2011 L4 PANSTARRS**
Amy J. Lovell¹, Ellen S. Howell²
¹*Agnes Scott College, Decatur, GA, United States.* ²*Arecibo Observatory/USRA, Arecibo, Puerto Rico, United States.*
- 413.20 The Puzzle of Hydrogen Cyanide in Comets: Is HCN a Product or is it a Primary Species?**
Michael J. Mumma¹, Boncho P. Bonev^{1,2}, Michael A. DiSanti¹, Erika L. Gibb³, Karen Magee-Sauer⁴, Lucas Paganini^{1,2}, Geronimo L. Villanueva^{1,2}
¹*NASA's GSFC, Greenbelt, MD, United States.* ²*Catholic University of America, Washington, DC, United States.* ³*University of Missouri, St. Louis, MO, United States.* ⁴*Rowan University, Glassboro, NJ, United States.*
- 413.21 Global 3D kinetic model of cometary rarefied atmosphere toward a description of the coma of Comet 103P/Hartley 2**
Nicolas Fougere¹, Michael R. Combi¹, Valeriy Tenishev¹
¹*University of Michigan, Ann Arbor, MI, United States.*
- 413.22 The volatile composition of comet 103P/Hartley 2 from ground-based radio observations**
Adeline Gicquel^{1,2}, Stefanie N. Milam², Anthony J. Remijan³, Yo-Ling Chuang⁴, Yi-Jehng Kuan^{4,5}, Iain M. Coulson⁶, Geronimo Villanueva², Steven B. Charnley², Martin M. Cordiner^{1,2}
¹*CUA, Washington, MD, United States.* ²*NASA GSFC, Greenbelt, MD, United States.* ³*NRAO, Charlottesville, VA, United States.* ⁴*National Taiwan Normal University, Taipei, Taiwan.* ⁵*ASIAA, Taipei, Taiwan.* ⁶*Joint Astronomy Center, Hilo, HI, United States.*
- 413.23 CO DETECTIONS IN 29P/SCHWASSMANN-WACHMANN 1 AT 6.21 AU USING NIRSPEC**
Jacqueline Keane¹, Michael D. DiSanti², Boncho P. Bonev^{3,2}, Lucas Paganini², Karen J. Meech¹, Michael J. Mumma², Geronimo L. Villanueva²
¹*Institute for Astronomy, University of Hawaii, Honolulu, HI, United States.* ²*Goddard Center for Astrobiology, NASA GSFC, Greenbelt, MD, United States.* ³*Catholic University of America, Washington, DC, United States.*
- 413.24 A New Analysis of Spitzer Thermal Images of Comet 29P/Schwassmann-Wachmann 1**
Charles A. Schambeau¹, Yanga R. Fernandez¹, Beatrice E. Mueller², Nalin H. Samarasingha², Laura M. Woodney⁴, Carey M. Lisse³
¹*University of Central Florida, Orlando, FL, United States.* ²*Planetary Science Institute, Tucson, AZ, United States.* ³*Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States.* ⁴*California State University San Bernardino, San Bernardino, CA, United States.*
- 413.25 Observations of Comet 2P/Encke During the Fall 2013 Apparition**
Laura Woodney¹, Paul A. Abell², Yanga R. Fernandez³, Beatrice E. Mueller⁴, Nalin H. Samarasingha⁴, Brian Chi⁵, Cynthia Farr¹, Haley Redinger⁵, Lindsey Schlueter¹
¹*Cal State Univ., San Bernardino, San Bernardino, CA, United States.* ²*NASA Johnson Space Center, Houston, TX, United States.* ³*University of Central Florida, Orlando, FL, United States.* ⁴*Planetary Science Institute, Tucson, AZ, United States.* ⁵*Mt. San Antonio College, Walnut, CA, United States.*
- 413.26 Hydrogen addition reactions of aliphatic hydrocarbons in comets**
Hitomi Kobayashi¹, Naoki Watanabe², Yoji Watanabe¹, Tomoya Fukushima¹, Hideyo Kawakita¹
¹*Kyoto Sangyo University, Kyoto, Kyoto, Japan.* ²*Institute of Low Temperature Science, Hokkaido University, Sapporo, Hokkaido, Japan.*

413.27 Hyper-volatiles in Comet C/2010 G2 (Hill)

Hideyo Kawakita¹, Neil Dello Russo², Ronald J. J. Vervack², Hitomi Kobayashi¹, Michael A. DiSanti³, Cyrielle Opitom⁴, Emmanuel Jehin⁴, Harold A. Weaver²
¹Kyoto Sangyo University, Kyoto, Kyoto, Japan. ²The Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States. ³Goddard Center for Astrobiology, NASA Goddard Space Flight Center, Greenbelt, MD, United States. ⁴F.R.S.-FNRS, Institut d'Astrophysique et de Géophysique, Université de Liège, Liège, Belgium.

413.28 Insights into Collisional between Small Bodies: Comparison of Impacted Magnesium-rich Minerals

Susan M. Lederer¹, Elizabeth E. Jensen², Cierra Strojia³, Douglas C. Smith³, Lindsay P. Keller¹, Keiko Nakamura-Messenger⁴, Eve L. Berger¹, Sean S. Lindsay⁵, Diane H. Wooden⁶, Mark J. Cintala¹, Michael E. Zolensky¹
¹NASA Johnson Space Center, Houston, TX, United States. ²Planetary Science Institute, Houston, TX, United States. ³California State University SB, San Bernardino, CA, United States. ⁴JETS Jacobs Technology, Houston, TX, United States. ⁵University of Tennessee, Knoxville, TN, United States. ⁶NASA Ames Research Center, Moffett Field, CA, United States.

413.29 Micrometeorite Impact Effects on Comets and Asteroids: Peak Pressure versus Spectral Variation

Elizabeth Jensen¹, Susan M. Lederer², Cierra Strojia³, Douglas C. Smith³, Diane H. Wooden⁴, Sean S. Lindsay⁵, Lindsay P. Keller², Mark J. Cintala², Michael E. Zolensky²
¹Planetary Science Institute, Tucson, AZ, United States. ²NASA/Johnson Space Center, Houston, TX, United States. ³California State University SB, San Bernardino, CA, United States. ⁴NASA/Ames Research Center, Moffett Field, CA, United States. ⁵University of Tennessee, Knoxville, TN, United States.

413.30 Search for the Return of Activity in Active Asteroid 176P/LINEAR

Henry H. Hsieh^{1,2}
¹Academia Sinica Institute of Astronomy and Astrophysics, Taipei, Taiwan. ²University of Hawaii, Honolulu, HI, United States.

413.31 3200 PHAETHON: IMPLICATIONS OF A UNIQUE POLE SOLUTION AND THERMAL MODELING

Megan Ansdell¹, Karen J. Meech¹, James Bauer¹, Olivier R. Hainaut¹, Luke Dundon¹, Norbert Schorghofer¹
¹University of Hawaii, Institute for Astronomy, Honolulu, HI, United States.

413.32 A Physical Model of Phaethon, a Near-Sun Object

Daniel C. Boice¹, Johannes Benkhoff², Walter F. Huebner¹
¹Southwest Research Inst., San Antonio, TX, United States. ²ESA/ESTEC, Noordwijk, Netherlands.

413.33 Up a Cliff: Further Evidence of Scarp as Jet Source Area on Comet 9P/Tempel 1

Jordan Steckloff¹, Jay Melosh¹
¹Purdue, Lafayette, IN, United States.

414 TNOs and Centaurs Posters

Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall

Chair: Wesley Fraser

414.01 Ordering Mean Motion Resonances with the Farey Tree: Application to the Kuiper Belt

Kathryn Volk¹, Renu Malhotra²
¹The University of British Columbia, Vancouver, BC, Canada. ²The University of Arizona, Tucson, AZ, United States.

- 414.02 A Divot in the Size Distribution of the Kuiper Belt's Scattering Objects?**
Cory Shankman^{1,3}, Brett Gladman², Nathan Kaib⁴, J. J. Kavelaars³, Jean-Marc Petit⁵
¹University of Victoria, Victoria, BC, Canada. ²University of British Columbia, Vancouver, BC, Canada. ³National Research Council of Canada, Victoria, BC, Canada. ⁴Canadian Institute for Theoretical Astrophysics, Toronto, ON, Canada. ⁵Institut UTINAM, Besançon, Franche-Comté, France.
- 414.03 Color Distribution of excited TNOs in HST's Frontier Fields**
Cesar Fuentes¹, David Trilling¹, Darin Ragozzine², Matthew Holman³, Gary Bernstein⁴, Paulo Penteado¹
¹Northern Arizona University, Flagstaff, AZ, United States. ²University of Florida, Gainesville, FL, United States. ³Smithsonian Institution Astrophysical Observatory, Cambridge, MA, United States. ⁴University of Pennsylvania, Philadelphia, PA, United States.
- 414.04 Rotational variability in medium and large sized TNOs.**
Vania Lorenzi¹, Noemí Pinilla-Alonso², Javier Licandro³, Joshua P. Emery², Cristina M. Dalle Ore^{4,5}
¹Fundación Galileo Galilei - INAF, Breña Baja, Santa Cruz de Tenerife, Spain. ²University of Tennessee, Knoxville, TN, United States. ³Instituto Astrofísico de Canarias, IAC, La Laguna, Santa Cruz de Tenerife, Spain. ⁴Carl Sagan Center, SETI Institute, Mountain View, CA, United States. ⁵NASA Ames Research Center, Moffett Field, CA, United States.
- 414.05 Preliminary Results On The Surface Composition Of Centaurs From IRAC/ Spitzer Photometry**
Noemi Pinilla-Alonso¹, Joshua P. Emery¹, David Trilling², Dale P. Cruikshank³, Yanga Fernandez⁴, Cristina M. Dalle Ore^{5,3}, John A. Stansberry⁶
¹Department of Earth and Planetary Sciences, University of Tennessee, Knoxville, TN, United States. ²Northern Arizona University, Flagstaff, AZ, United States. ³NASA Ames Research Center, Moffett Field, CA, United States. ⁴University of Central Florida, Orlando, FL, United States. ⁵Carl Sagan Center, SETI Institute, Mountain View, CA, United States. ⁶Space Telescope Science Institute, Baltimore, MD, United States.
- 414.06 New Scattered Disk Object and Centaur Colors**
Melissa Brucker¹, Patrick Wilcox¹, John Stansberry^{2,3}
¹Univ. of Nebraska - Lincoln, Lincoln, NE, United States. ²Steward Observatory, Tucson, AZ, United States. ³Space Telescope Science Institute, Baltimore, MD, United States.
- 414.07 29 November 2011 Stellar Occultation by 2060 Chiron: Symmetric Jet-like Features**
Jessica D. Ruprecht¹, Amanda S. Bosh¹, Michael J. Person¹, Federica B. Bianco^{2,3}, Benjamin J. Fulton^{5,3}, Amanda A. S. Gulbis^{1,4}, Schelte J. Bus⁵, Amanda M. Zangari^{1,6}
¹MIT, Cambridge, MA, United States. ²New York University, New York, NY, United States. ³Las Cumbres Global Telescope Network, Inc., Goleta, CA, United States. ⁴The Southern African Large Telescope, Observatory, South Africa. ⁵University of Hawaii, Honolulu, HI, United States. ⁶SwRI, Boulder, CO, United States.
- 414.08 Status of the Transneptunian Automated Occultation Survey (TAOS II)**
Matthew Lehner^{1,2}, Shiang-Yu Wang¹, Paul Ho¹, Zhi-Wei Zhang¹, Kem Cook¹, Wei-Ling Yen¹, Mauricio Reyes-Ruiz³, David Hiriart³, Michael Richer³, Charles Alcock⁴, Andrew Szentgyorgyi⁴, John Geary⁴, Tim Norton⁴, Gabor Furesz⁴
¹Academia Sinica Institute of Astronomy and Astrophysics, Taipei, Taiwan. ²University of Pennsylvania, Philadelphia, PA, United States. ³Universidad Nacional Autónoma de México, Ensenada, BC, Mexico. ⁴Harvard Smithsonian Center for Astrophysics, Cambridge, MA, United States.

- 414.09 Probing The Outer Solar System Small Bodies With Stellar Occultations**
Lucie Maquet¹, Françoise Roques¹, Alain Doressoundiram¹, Chih-Yuan Liu¹,
 Hsiang-Kuan Chang², Shih I. Chun³
¹LESIA/Observatoire de Paris, Meudon, Paris, France. ²National Tsing Hua University,
 Taiwan, Taiwan. ³GEPI/Observatoire de Paris, Meudon, France.
- 414.10 OSSOS: The New Era of Precision Planetary Cosmogony**
Michele Bannister^{1,2}, J. J. Kavelaars^{1,2}, Brett Gladman³, Jean-Marc Petit⁴
¹NRC-Herzberg, Victoria, BC, Canada. ²University of Victoria, Victoria, BC, Canada. ³
 University of British Columbia, Vancouver, BC, Canada. ⁴Institut UTINAM - UMR
 CNRS ⁶²¹³, Observatoire de Besancon, Besancon, France.
Contributing teams: the OSSOS Collaboration
- 414.11 An Unusually Shaped Haumea Family Member**
Pedro Lacerda¹
¹Queen's University Belfast, Belfast, United Kingdom.
- 414.12 Involving Citizen Scientists to Measure Trans-Neptunian Objects**
John Keller¹, Marc W. Buie²
¹California Polytechnic State University, San Luis Obispo, CA, United States. ²Southwest
 Research Institute, Boulder, CO, United States.

415 Origins Posters

Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall

Chair: Douglas Hamilton

- 415.01 Regional Source of the Earth-Moon Progenitors**
Billy L. Quarles¹, Jack Lissauer¹
¹NASA Ames Research Center, Moffett Field, CA, United States.
- 415.02 Formation of multiple-satellite systems from circumplanetary particle disks**
Ryuki Hyodo¹, Keiji Ohtsuki¹, Takaaki Takeda²
¹Kobe University, Kobe, Japan. ²National Astronomical Observatory of Japan, Mitaka,
 Tokyo, Japan.
- 415.03 The Evolution and Survival of Gaseous Protoplanets Embedded in a Disk**
Ravit Helled¹, Allona Vazan¹
¹Tel-Aviv University, Tel-Aviv, South, Israel, Israel.
- 415.04 Transport of C- and O-bearing volatiles in protoplanetary disks: implications
 for the formation of carbon-rich planets**
Mohamad Ali Dib¹, Olivier Mousis¹, Jean-Marc Petit¹
¹Institut UTINAM, CNRS-UMR ⁶²¹³, Observatoire de Besancon, BP ¹⁶¹⁵, Besancon, Franche-
 Comte, France.
- 415.05 Effect of a gaseous transition disc on planetesimal driven migration**
Mauricio Reyes-Ruiz¹, Hector Aceves¹, Carlos E. Chavez², Santiago Torres¹
¹Instituto de Astronomía, UNAM, Ensenada, Baja California, Mexico. ²Facultad de
 Ingeniería Mecánica y Eléctrica, UANL, Monterrey, Nuevo Leon, Mexico.
- 415.06 Vortex Formation in Vertically Stratified Protoplanetary Disks**
Glen R. Stewart¹
¹Univ. of Colorado, Boulder, CO, United States.
- 415.07 Primary Accretion and Turbulent Cascades: Scale-Dependence of Particle
 Concentration Multiplier Probability Distribution Functions**
Jeffrey N. Cuzzi¹, Brian Weston², Karim Shariff¹
¹NASA Ames Research Center, Moffett Field, CA, United States. ²University of California,
 Davis, CA, United States.

- 415.08 Building a Planetesimal: low-velocity collisions between centimeter sized proto-planetesimals**
Akbar Whizin¹, Joshua E. Colwell¹, Mark C. Lewis²
¹University of Central Florida, Orlando, FL, United States. ²Trinity College, San Antonio, TX, United States.
- 415.08 Building a Planetesimal: low-velocity collisions between centimeter sized proto-planetesimals**
Akbar Whizin¹, Joshua E. Colwell¹, Mark C. Lewis²
¹University of Central Florida, Orlando, FL, United States. ²Trinity College, San Antonio, TX, United States.
- 415.09 Dynamics of Colliding Clusters of Millimeter Sized Adhesive Particles**
Mark C. Lewis¹, Akbar Whizin², Josh E. Colwell²
¹Trinity University, San Antonio, TX, United States. ²University of Central Florida, Orlando, TX, United States.
- 415.10 Fast Formation of Giant Planets by Photophoresis**
Jens Teiser¹, Sarah E. Dodson-Robinson²
¹University Duisburg-Essen, Duisburg, Germany. ²University of Texas at Austin, Austin, TX, United States.
- 415.11 Promises and Problems of Pebble Accretion**
Katherine A. Kretke¹, Harold F. Levison¹
¹Southwest Research Institute, Boulder, CO, United States.
- 415.12 Water and OH in Protoplanetary Disks Irradiated by FUV and X-rays**
Mate Adamkovics¹, Alfred E. Glassgold¹, Joan R. Najita²
¹University of California, Berkeley, Berkeley, CA, United States. ²National Optical Astronomy Observatory, Tucson, AZ, United States.
- 415.13 N-Body Simulations of Low-Velocity Impact Experiments**
Madison Stemm¹, Josh Colwell¹, Mark C. Lewis², Damien Denis³, Tony Ordoñez³
¹University of Central Florida, Orlando, FL, United States. ²Trinity University, San Antonio, TX, United States. ³University of Florida, Gainesville, FL, United States.
- 415.14 Formation of regular satellites from the spreading of massive rings : Why some planets have one moon and other have many ?**
Sebastien Charnoz¹, Aurélien Crida²
¹Université Paris Diderot / CEA Saclay, Paris , France. ²Observatoire de Nice Côte d'Azur / Université de Nice Sophia Antipolis, Paris , France.

416 Enceladus Posters

Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall

Chair: Carly Howett

- 416.01 Enceladus Near-Fissure Surface Temperatures**
Robert R. Howell¹, Jay D. Goguen², John R. Spencer³
¹Univ. of Wyoming, Laramie, WY, United States. ²JPL, Pasadena, CA, United States. ³SwRI, Boulder, CO, United States.
- 416.02 Direct Monte Carlo Simulations of Gas Flow from Enceladus' Nozzle-like Vents**
Orenthal Tucker¹, Michael R. Combi¹, Valeriy Tenishev¹
¹University of Michigan, Ann Arbor, MI, United States.
- 416.03 The Source of CO₂ Ice on Enceladus' Surface**
Dennis L. Matson¹, Ashley G. Davies¹, Torrence V. Johnson¹, Julie C. Castillo-Rogez¹, Jonathan I. Lunine²
¹Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States. ²Department of Astronomy, Cornell University, Ithaca, NY, United States.

- 416.04 Silica nanoparticles as an evidence of hydrothermal activities at Enceladus**
Hsiang-Wen Hsu¹, Frank Postberg², Yasuhito Sekine³, Sascha Kempf¹, Antal Juhasz⁴, Mihaly Horanyi¹
¹LASP, Uni. of Colorado Boulder, Boulder, CO, United States. ²Uni. of Stuttgart, Stuttgart, Germany. ³Tokyo Uni., Tokyo, Japan. ⁴KFKI Institute, Budapest, Hungary.
- 416.05 Enceladus Close Up: New Details Recovered from Cassini ISS Boresight-Drage Images**
Paul Helfenstein¹, Peter C. Thomas¹, Joseph Veverka¹
¹Cornell University, Ithaca, NY, United States.
- 416.06 Modeling a close-up observation of Enceladus by Cassini/VIMS with layered water ice**
Gary B. Hansen¹, Katrin Stephan²
¹Univ. of Washington, Seattle, WA, United States. ²German Aerospace Center (DLR), Berlin, Germany.

417 Other Icy Satellites Posters

Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall

Chair: Anne Verbiscer

- 417.01 Interpreting the Thermal Lightcurve of Iapetus at 1.3mm**
Norland Raphael Hagen^{1,2}, Arielle Moullet², Mark Gurwell³
¹University of Montana, Missoula, MT, United States. ²National Radio Astronomy Observatory, Charlottesville, VA, United States. ³Harvard-Smithsonian CfA, Cambridge, MA, United States.
- 417.02 Photometric Properties of Thermally Anomalous Terrain on Icy Saturnian Satellites**
Andrew Annex¹, Anne J. Verbiscer¹, Paul Helfenstein², Carly Howett³, Paul Schenk⁴
¹The University of Virginia, Charlottesville, VA, United States. ²Cornell University, Ithaca, NY, United States. ³Southwest Research Institute, Boulder, CO, United States. ⁴Lunar and Planetary Institute, Houston, TX, United States.
- 417.03 Cassini CIRS characterization of icy moon surface composition**
Cindy L. Young¹, James J. Wray¹, John R. Spencer², Roger N. Clark³, Kevin P. Hand⁴
¹Georgia Institute of Technology, Atlanta, GA, United States. ²Southwest Research Institute, Boulder, CO, United States. ³U.S. Geological Survey, Denver, CO, United States. ⁴Jet Propulsion Laboratory, Pasadena, CA, United States.
- 417.04 Hydrocarbons and other organic materials on Iapetus: Revised analysis**
Dale P. Cruikshank¹, Cristina M. Dalle Ore^{1,2}, Yvonne J. Pendleton¹, Roger N. Clark³
¹NASA Ames Research Center, Moffett Field, CA, United States. ²SETI Institute, Mtn. View, CA, United States. ³USGS, Denver, CO, United States.
- 417.05 Looking for Dione's Volatiles with Cassini's Ultraviolet Imaging Spectrograph**
Candice Hansen¹, Amanda Hendrix¹, Larry Esposito²
¹PSI, Tucson, AZ, United States. ²University of Colorado, Boulder, CO, United States.
- 417.06 Geologic Evolution of Saturn's Icy Moon Tethys**
Roland Wagner¹, Katrin Stephan¹, Nico Schmedemann², Thomas Roatsch¹, Elke Kersten¹, Gerhard Neukum², Carolyn C. Porco³
¹DLR, Institute of Planetary Research, Berlin, Germany. ²Institute of Geosciences, Freie Universitaet, Berlin, Germany. ³Space Science Institute, Boulder, CO, United States.
- 417.07 Comparison between Dione' and Enceladus' terrain units**
Francesca Scipioni¹, Federico Tosi¹, Katrin Stephan², Gianrico Filacchione¹, Fabrizio Capaccioni¹, Priscilla Cerroni¹
¹INAF-IAPS, Rome, Italy. ²DLR, Berlin, Germany.

417.08 Can Spatial Statistics Provide Another Approach to Understanding Impact Crater Saturation Equilibrium?**Michelle Kirchoff¹**¹Southwest Research Institute, Boulder, CO, United States.**417.09 Catastrophic Collisions of Icy Satellites****Donald Korycansky¹**, Naor Movshovitz¹¹University of California Santa Cruz, Santa Cruz, CA, United States.**418 Galilean Satellites Posters****Poster Session 03:30 PM to 06:00 PM in Plaza Exhibit Hall****Chair: Kurt Retherford****418.01 Io during the New Horizons era: Insights from spacecraft and ground-based data****Julie A. Rathbun^{1,2}**, John R. Spencer³, Constantine Tsang³, Rosaly Lopes⁴¹Planetary Science Institute, Tucson, AZ, United States. ²University of Redlands, Redlands, CA, United States. ³Southwest Research Institute, Boulder, CO, United States. ⁴Jet Propulsion Lab, Pasadena, CA, United States.**418.02 Constraining Diameters of Ash Particles in Io's Pele Plume by DSMC Simulation****William McDoniel¹**, David B. Goldstein¹, Philip L. Varghese¹, Laurence M. Trafton¹¹The University of Texas at Austin, Austin, TX, United States.**418.03 Simulations of Global Flows in Io's Rarefied Atmosphere****William A. Hoey¹**, David B. Goldstein¹, Philip L. Varghese¹, Laurence M. Trafton¹, Andrew C. Walker²¹ASE, The University of Texas at Austin, Austin, TX, United States. ²Los Alamos National Laboratory, Los Alamos, NM, United States.**418.04 Europa's Atmosphere: Production & Loss****Fran Bagenal¹**, Tim Cassidy¹, Vincent Dols¹, Frank Cray¹¹Univ. of Colorado, Boulder, CO, United States.**418.05 VUV spectroscopy and photochemistry of ices relevant to outer solar system icy bodies****Murthy Gudipati^{1,2}**, Antti Lignell^{5,1}, Uwe Arp³, Ted Roush⁴¹Jet Propulsion Laboratory, Pasadena, CA, United States. ²University of Maryland, College Park, MD, United States. ³NIST, Gaithersburg, MD, United States. ⁴NASA Ames Research Center, Moffett Field, CA, United States. ⁵California Institute of Technology, Pasadena, CA, United States.**418.06 The Gravitational Fields of the Galilean Satellites -- Revisited****Robert A. Jacobson¹**¹Jet Propulsion Laboratory, Pasadena, CA, United States.**418.07 Science of the Europa Clipper Mission Concept****Robert T. Pappalardo¹**, David Senske¹, Louise Prockter², Brian Paczkowski¹, Steve Vance¹, Wes Patterson², Barry Goldstein¹, Tom Magner², Brian Cooke¹¹Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States. ²Johns Hopkins Applied Physics Laboratory, Laurel, MD, United States.**Contributing teams: Europa Study Team****418.08 Studying the Formation, Evolution, and Habitability of the Galilean Satellites****J. H. Waite¹**, Tim Brockwell¹, Melissa A. McGrath², William B. McKinnon³, Danielle Wyrick¹, Olivier Mousis⁴, Brian Magee¹¹Southwest Research Institute, San Antonio, TX, United States. ²NASA Marshall Space Flight Center, Huntsville, AL, United States. ³Washington University, St. Louis, MO, United States. ⁴CNRS Observatoire de Besancon, Besancon, France.

FRIDAY

500 Mars 3: Atmosphere

Oral Session 08:30 AM to 10:05 AM in Plaza ABC

Chair: Daniel Tyler & Melinda Kahre

- 500.01 **Cloudy Greenhouse on Noachian Mars**
Owen B. Toon¹, Eric Wolf¹, Richard A. Urata²
¹Univ. of Colorado, Boulder, CO, United States. ²NASA Ames Research Center, Moffett Field, CA, United States.
- 500.02 **The Energetics of a Collapsing Martian Atmosphere**
Alejandro Soto¹, Michael A. Mischna², Mark I. Richardson³
¹Southwest Research Institute, Boulder, CO, United States. ²Jet Propulsion Laboratory, Pasadena, CA, United States. ³Ashima Research, Pasadena, CA, United States.
- 500.03 **The icy highlands scenario for early Mars: modeling of transient melting events and comparison with the geological evidence**
Robin Wordsworth¹, Laura Kerber², François Forget², James W. Head³, Jean-Baptiste Madeleine^{3,2}, Ehouarn Millour², Kathleen Scanlon³
¹UChicago, Chicago, IL, United States. ²Laboratoire de Meteorologie Dynamique, Paris, France. ³Brown University, Brown, RI, United States.
- 500.04 **Atmospheric Structure and Diurnal Variations at Low Altitudes in the Martian Tropics**
David P. Hinson^{1,2}, Aymeric Spiga³, Stephen Lewis⁴, Silvia Tellmann⁵, Martin Pätzold⁵, Sami Asmar⁶, Bernd Häusler⁷
¹SETI Institute, Mountain View, CA, United States. ²Stanford University, Stanford, CA, United States. ³Université Pierre et Marie Curie, Paris, France. ⁴The Open University, Milton Keynes, United Kingdom. ⁵Universität zu Köln, Cologne, Germany. ⁶Jet Propulsion Laboratory, Pasadena, CA, United States. ⁷Universität der Bundeswehr München, Neubiberg, Germany.
- 500.05 **Inter-Annual Similarities during the Martian Dusty Season**
David M. Kass¹, Armin Kleinböhl¹, Dan J. McCleese¹, Tim Schofield¹, Michael D. Smith²
¹JPL, Pasadena, CA, United States. ²NASA Goddard Space Flight Center, Greenbelt, MD, United States.
Contributing teams: MCS Team
- 500.06 **Extending the NASA Ames Mars General Circulation Model to Explore Mars' Middle Atmosphere**
Amanda Brecht¹, Jeffery Hollingsworth¹, Melinda Kahre¹, James Schaeffer¹
¹Nasa Ames Research Center, Mountain View, CA, United States.
- 500.07 **New nitric oxide (NO) nightglow measurements with SPICAM/MEX as a tracer of Mars upper atmosphere circulation**
Marie-Ève Gagné¹, Jean-Loup Bertaux², Francisco González-Galindo³, Franck Montmessin²
¹Canadian Centre for Climate Modelling and Analysis, Environment Canada, Victoria, BC, Canada. ²LATMOS/INSU, Guyancourt, France. ³Instituto de Astrofísica de Andalucía, Granada, Spain.
- 500.08 **Mars Obstacle Distortions of the Draped Magnetosheath Fields -Insights from MHD Models of the Solar Wind Interaction**
Janet Luhmann¹, Yingjuan Ma², Demet Ulusen³, David Brain⁴, Jasper Halekas¹, Jared Espley⁵
¹UC, Berkeley, Berkeley, CA, United States. ²IGPP UCLA, Los Angeles, CA, United States. ³TUBITAK, Ankara, Turkey. ⁴LASP University of Colorado, Boulder, CO, United States. ⁵GSFC, Greenbelt, MD, United States.

500.09 Plasma Temperatures at Mars

Majd Mayyasi-Matta¹, Michael Mendillo¹, Marina Galand², Luke Moore¹, Paul Withers¹

¹Boston University, Boston, MA, United States. ²Imperial college London, London, United Kingdom.

501 Galilean Satellites 1

Oral Session 08:30 AM to 10:00 AM in Plaza E

Chair: Robert Pappalardo & Julie Rathbun

501.01 Spatially Resolved HST/STIS Observations of io's Dayside Equatorial Atmosphere

Kandis-Lea Jessup¹

¹, Boulder, CO, United States.

Contributing teams: John Spencer

501.02 Io's Post-Eclipse Atmosphere: Evidence Against Atmospheric Collapse During Eclipse

Constantine Tsang¹, John R. Spencer¹, Kandis Lea Jessup¹, Nathaniel Cunningham², Kurt D. Retherford³, Lorenz Roth³, Joachim Saur⁴

¹Southwest Research Institute, Boulder, CO, United States. ²Nebraska Wesleyan University, Lincoln, NE, United States. ³Southwest Research Institute, San Antonio, TX, United States. ⁴University of Cologne, Cologne, Germany.

501.03 HST/COS Detection of Atomic Oxygen Emissions from the Atmosphere of Callisto

Nathaniel J. Cunningham¹, John R. Spencer², Paul D. Feldman³, Darrell F. Strobel³, Kevin France⁴

¹Nebraska Wesleyan University, Lincoln, NE, United States. ²Southwest Research Institute, Boulder, CO, United States. ³Johns Hopkins University, Baltimore, MD, United States. ⁴University of Colorado, Boulder, CO, United States.

501.04 The Ultraviolet Albedo of Ganymede

Melissa McGrath¹, Amanda Hendrix²

¹NASA Marshall Space Flight Center, Huntsville, AL, United States. ²Planetary Science Institute, Tucson, AZ, United States.

501.05 Local Topographic Shielding and Radiation Shadows from Electron Irradiation on Europa

Terry Hurford¹, John F. Cooper¹, Chris Paranicas², Richard Greenberg³, Steven J. Sturmer^{1,4}

¹NASA GSFC, Greenbelt, MD, United States. ²APL, Laurel, MD, United States. ³University of Arizona, Tucson, AZ, United States. ⁴University of Maryland, Baltimore County, Baltimore, MD, United States.

501.06 Does Extension Play a Role in Ionian Tectonics? Potential Effects of Preexisting Bounding Faults, Local Brittle Failure, and Sulfur Pore Pressure on Crustal Stresses

William B. McKinnon¹, Michelle Kirchoff², Michael Bland¹

¹Washington Univ., Saint Louis, MO, United States. ²Southwest Res. Inst., Boulder, CO, United States.

501.07 A Chaos Conveyor Belt

Britney E. Schmidt¹

¹Earth and Atmospheric Sciences, Georgia Institute of Technology, Atlanta, GA, United States.

501.08 Forming Ganymede's grooves at smaller strains: Toward a consistent local- and global-scale strain history for Ganymede

Michael T. Bland¹, William B. McKinnon¹

¹Washington University in St. Louis, Saint Louis, MO, United States.

501.09 The Pinnacles of Callisto

Jeffrey M. Moore¹, Alan D. Howard², Paul M. Schenk³

¹NASA Ames Research Center, Moffett Field, CA, United States. ²University of Virginia, Charlottesville, VA, United States. ³Lunar and Planetary Institute, Houston, TX, United States.

502 Comets 2: Volatile Activity

Oral Session 08:30 AM to 10:00 AM in Plaza F

Chair: Nicolas Fougere & Laura Woodney

502.01 First Cometary Observations with ALMA: C/2012 F6 (Lemmon)

Martin Cordiner¹, Stefanie N. Milam¹, Michael J. Mumma¹, Anthony Remijan⁴, Lucas Paganini¹, Steven B. Charnley¹, Geronimo Villanueva¹, Jacques Crovisier², Nicolas Biver², Dominique Bockelee-Morvan², Jeremie Boissier³, Iain M. Coulson⁷, Yi-Jehng Kuan⁵, Dariusz C. Lis⁶

¹NASA Goddard Space Flight Center, Greenbelt, MD, United States. ²Observatoire de Paris, Meudon, France. ³INAF, Bologna, Italy. ⁴NRAO, Charlottesville, WV, United States. ⁵National Taiwan Normal University, Taipei, Taiwan. ⁶Caltech, Pasadena, CA, United States. ⁷Joint Astronomy Centre, Hilo, HI, United States.

502.02 Pre- And Post-Perihelion Results On The "Unexpectedly-Bright" Comet C/2012 F6 (Lemmon) Using IR Spectroscopy

Lucas Paganini^{1,2}, Michael A. DiSanti¹, Michael J. Mumma¹, Geronimo L. Villanueva^{1,2}, Boncho P. Bonev^{1,2}, Erika L. Gibb³, Hermann Bönnhardt⁴, Manuela Lippi⁴, Hans U. Käuffl⁵

¹Goddard Center for Astrobiology, Greenbelt, MD, United States. ²Department of Physics, Catholic University of America, Washington, DC, United States. ³Department of Physics & Astronomy, University of Missouri, St. Louis, MO, United States. ⁴Max-Planck-Institut für Sonnensystemforschung, Katlenburg-Lindau, Niedersachsen, Germany. ⁵European Southern Observatory, Garching, Bavaria, Germany.

502.03 IRAM-30m Molecular Submm Surveys of Two Very Different Comets: C/2011 L4 (PanSTARRS) and C/2012 F6 (Lemmon)

Nicolas Biver¹, Vincent Debout¹, Dominique Bockelee-Morvan¹, Jacques Crovisier¹, Pierre Colom¹, Raphael Moreno¹, Jeremie Boissier², Gabriel Paubert³, Dariusz C. Lis⁵, Paul Hartogh⁴, Neil Delo-Russo⁶, Ronald Vervack⁶, Harold A. Weaver⁶

¹LESIA, Obs. de Paris, Meudon, France. ²ESO/ARC-Bologna, Bologna, Italy. ³IRAM, Granada, Spain. ⁴MPS, Lindau, Germany. ⁵Caltech, Pasadena, CA, United States. ⁶Johns Hopkins Univ., APL, Laurel, MD, United States.

502.04 Multi-Wavelength Observations of Comet C/2011 L4 (PanSTARRS)

Bin Yang¹, Jacqueline V. Keane^{1,2}, Karen J. Meech^{1,2}, Tobias Owen², Richard Wainscoat²

¹NASA Astrobiology Institute, University of Hawaii, Honolulu, HI, United States. ²Institute for Astronomy, University of Hawaii, Honolulu, HI, United States.

502.05 Spatially Resolved Spectroscopic Observations of Na and K in the Tail of Comet C/2011 L4 (PanSTARRS)

Anita L. Cochran¹, Diane H. Wooden², Adam J. McKay³, Gianna Cauzzi⁴, Kevin Reardon⁵, Gian Paolo Tozzi⁴

¹McDonald Observatory, Austin, TX, United States. ²Nasa Ames, Mountain View, CA, United States. ³New Mexico State Univ., Las Cruces, NM, United States. ⁴INAF-Arcetri, Florence, Italy. ⁵National Solar Observatory, Sunspot, NM, United States.

- 502.06 Spatial Distribution and Rotational Variations of Comet 103/P Hartley 2's Volatiles**
Jessica Sunshine¹, Lori M. Feaga¹, Silvia Protopapa¹, Olivier Groussin², Sebastien Besse³, Michael F. A'Hearn¹, Tony L. Farnham¹, Michael S. Kelley¹
¹University of Maryland, College Park, MD, United States. ²Laboratoire d'Astrophysique de Marseille, CNRS and Université de Provence, Marseille, France. ³ESA/ESTEC, Noordwijk, Netherlands.
- 502.07 The Origin of Daughter Species in Cometary Comae: Results from Observations of Comets 103P/Hartley and C/2009 P1 Garradd**
Adam McKay¹, Nancy Chanover¹, Michael DiSanti², Jeffrey P. Morgenthaler³, Geronimo Villanueva², Anita Cochran⁴, Walter Harris⁵, Neil Dello Russo⁶, Ronald J. Vervack⁶
¹New Mexico State University, Las Cruces, NM, United States. ²NASA Goddard Space Flight Center, Greenbelt, MD, United States. ³Planetary Science Institute, Tucson, AZ, United States. ⁴University of Texas Austin/McDonald Observatory, Austin, TX, United States. ⁵University of California Davis, Davis, CA, United States. ⁶Johns Hopkins Applied Physics Laboratory, Laurel, MD, United States.
- 502.08 Study of the Forbidden Oxygen Lines in Comets at Different Heliocentric and Nucleocentric Distances**
Alice Decock¹, Philippe Rousselot², Emmanuel Jehin¹, Damien Hutsemékers¹, Jean Manfroid¹, Anil Bhardwaj³, Susarla Raghuram³
¹Université de Liège, Département d'Astrophysique, de Géophysique et d'Océanographie, Liège, Belgium. ²Université de Franche-Comté, Observatoire des Sciences de l'Univers THETA, Institut UTINAM, Besançon, France. ³Space Physics Laboratory, Trivandrum, India.

503 Origins 1: Solar System Shuffle and Outer Moons

Oral Session 10:30 AM to 11:20 AM in Plaza ABC

Chair: Sarah Morrison & Matija Cuk

- 503.01 On the Behavior of the Galilean Satellites in the Jumping Jupiter Scenario**
Rogério Deienno^{1,2}, David Nesvorný², Tadashi Yokoyama³
¹Instituto Nacional de Pesquisas Espaciais, São Paulo, São Paulo, Brazil. ²Southwest Research Institute, Boulder, CO, United States. ³Universidade Estadual Paulista, Rio Claro, São Paulo, Brazil.
- 503.02 'Getting down to brass tacks' in the Grand Tack scenario: matching important accretion and timing constraints**
Seth A. Jacobson^{1,2}, Alessandro Morbidelli¹, Kevin J. Walsh³, David P. O'Brien⁴, Sean N. Raymond⁵
¹Observatoire de la Côte d'Azur, Nice, France. ²Bayerisches Geoinstitut, Bayreuth, Germany. ³Southwest Research Institute, Boulder, CO, United States. ⁴Planetary Science Institute, Tucson, AZ, United States. ⁵Universite de Bordeaux, Floriac, France.
- 503.03 Terrestrial Planet Formation During the Migration and Resonance Crossings of the Giant Planets**
Patryk S. Lykawka¹, Takashi Ito²
¹Kinki University, Higashiosaka, Osaka, Japan. ²National Astronomical Observatory of Japan, Mitaka, Tokyo, Japan.
- 503.04 Dynamical Fate of Clumps Formed in Satellite Mergers**
Erik Asphaug¹, Desiree Cotto-Figueroa¹, Andreas Reufer¹
¹ASU, Tempe, AZ, United States.
- 503.05 Forming the small satellites of Pluto**
Harold F. Levison¹, Kevin Walsh¹
¹Southwest Research Inst., Boulder, CO, United States.

504 Galilean Satellites 2

Oral Session 10:30 AM to 10:50 AM in Plaza E

Chair: John Spencer

504.01 Cycloid Formation in Europa's Viscoelastic Ice Shell

Alyssa R. Rhoden¹, Hermes Jara-Orue², Terry Hurford¹, Bert Vermeersen²

¹NASA Goddard, Greenbelt, MD, United States. ²Delft University of Technology, Delft, Netherlands.

504.02 Measurements of the spin states of Europa and Ganymede

Jean-Luc Margot¹, Sebastiano Padovan¹, Donald Campbell², Stanton Peale³, Frank Ghigo⁴

¹University of California, Los Angeles, Los Angeles, CA, United States. ²Cornell University, Ithaca, NY, United States. ³University of California, Santa Barbara, Santa Barbara, CA, United States. ⁴National Radio Astronomy Laboratory, Green Bank, WV, United States.

505 Comets 3: Potpourri

Oral Session 10:30 AM to 12:00 PM in Plaza F

Chair: Michael Kelley & Colin Snodgrass

505.01 Rotation Analyses of Main-belt Comet P/2006 VW139

Heather Kaluna¹, Karen Meech¹, Henry H. Hsieh¹

¹Institute for Astronomy, UH Manoa, Honolulu, HI, United States.

505.02 Properties of dust in inner cometary comae from polarimetric observations

A. Levasseur-Regourd¹, Edith Hadamcik²

¹Univ. P. & M. Curie, LATMOS, paris, France. ²LATMOS, Guyancourt, France.

505.03 Characteristics of Deep Impact Ejecta Dust in the Immediate Aftermath of Collision

Ludmilla Kolokolova¹, Lev Nagdimunov¹, Michael Wolff², Michael A'Hearn¹, Tony Farnham¹

¹University of Maryland, College Park, MD, United States. ²Space Science Institute, Boulder, CO, United States.

505.04 Detailed Characterization of Low Activity Comet 49P/Arend-Rigaux

Laurie Urban¹, Karen J. Meech¹, Stefano Mottola², Ekkehard Kuehrt²

¹Institute for Astronomy at the University of Hawaii, Honolulu, HI, United States. ²German Aerospace Center (DLR) Institute of Planetary Research, Berlin, Germany.

505.05 Sub-millimeter Observation of Water Vapor at 557 GHz in Comet C/2002 T7 (LINEAR)

Seungwon Lee¹, Mark Hofstadter¹, Margaret Frerking¹, Samuel Gulkis¹, Paul von Allmen¹, Lucas Kamp¹, Jacques Crovisier², Nicolas Biver², Dominique Bockele-Morvan², Mathieu Choukroun¹, Stephen Keihm¹, Michael Janssen¹

¹JPL, California Institute of Technology, Pasadena, CA, United States. ²Observatoire de Paris-Meudon, Meudon, France.

505.06 A Search For ¹⁵NH₂ Emission Lines In Comets

Philippe Rousselot¹, Olivier Pirali², Emmanuël Jehin³, Michel Vervloet², Damien Hutsemékers³, Jean Manfroid³, Daniel Cordier¹, Marie-Aline Martin², Sébastien Gruet², Alice Decock³

¹Institut UTINAM, OSU THETA, ²⁵⁰¹⁰Besancon Cedex, France. ²Synchrotron SOLEIL, lignes AILES, ⁹¹¹⁹²Saint Aubin, France. ³Université de Liège, ⁴⁰⁰⁰Liège, Belgium.

- 505.07 FUV spectroscopy of the comet C/2001 Q4 (NEAT) with FIMS**
Yeo-Myeong Lim¹, Kyoung Wook Min¹, Paul D. Feldman²
¹Physics, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea, Republic of. ²Johns Hopkins University, Baltimore, MD, United States.
- 505.08 Capabilities to measure isotopic ratios in water at comet 67P/Churyumov-Gerasimenko with ROSINA/DFMS**
Myrtha Hässig¹, Kathrin Altwegg¹, Hans Balsiger¹, Jean-Jacques Berthelier², Ursina Calmonte¹, Michael R. Combi³, Johann De Keyser⁴, Björn Fiethe⁵, Stephen A. Fuselier⁶, Martin Rubin¹
¹Space Research and Planetary Sciences, University of Bern, Bern, Switzerland. ²LATMOS, Saint-Maur, France. ³AOSS, University of Michigan, Ann Arbor, MI, United States. ⁴Space Physics Division, BIRA IASB, Brussels, Belgium. ⁵Institute of Computer and Network Engineering, TU Braunschweig, Braunschweig, Germany. ⁶Southwest Research Institute, San Antonio, TX, United States.
Contributing teams: ROSINA-Team

506 Jovian Planets 1: Atmospheric Chemistry and Microphysics

Oral Session 10:50 AM to 12:05 PM in Plaza E

Chair: Nancy Chanover & Brigitte Hesman

- 506.01 An Intense Red Jovian Cyclone: Another Key to Finding the Chromophores?**
Amy A. Simon-Miller¹, Robert W. Carlson², Agustin Sanchez-Lavega³
¹NASA's GSFC, Greenbelt, MD, United States. ²Jet Propulsion Laboratory, Pasadena, CA, United States. ³Universidad del País Vasco, Bilbao, Spain.
- 506.02 Spot-On: Ammonium Hydrogen Sulfide and Jupiter's Great Red Spot**
Mark Loeffler¹, Reggie Hudson¹, Nancy Chanover², Amy Simon-Miller¹
¹NASA GSFC, Greenbelt, MD, United States. ²New Mexico State University, Las Cruces, NM, United States.
- 506.03 The Deep Cloud Structure and Volatile Abundances in Jupiter's Great Red Spot**
Gordon Bjoraker¹, Imke de Pater², Michael H. Wong², Mate Adamkovics², Tilak Hewagama³
¹NASA's GSFC, Greenbelt, MD, United States. ²Univ. California-Berkeley, Berkeley, CA, United States. ³Univ. of Maryland, College Park, MD, United States.
- 506.04 Saturn Limb Hazes as Seen from Cassini**
Kathy Rages¹, Erika Barth²
¹SETI Institute, Mountain View, CA, United States. ²Southwest Research Institute, Boulder, CO, United States.
- 506.05 Microphysical Modeling of Saturn Limb Hazes**
Erika L. Barth¹, Kathy Rages²
¹Southwest Research Inst., Boulder, CO, United States. ²SETI Institute, Mountain View, CA, United States.
- 506.06 Seasonal changes in Saturn's stratosphere from Cassini/CIRS data**
Melody Sylvestre^{1,2}, Thierry Fouchet¹, Sandrine Guerlet², Aymeric Spiga², Frederic M. Flasar³, Brigitte E. Hesman³, Gordon L. Bjoraker³
¹LESIA - Observatoire de Paris, Meudon, France. ²LMD, Paris, France. ³GSFC/NASA, Greenbelt, MD, United States.
- 506.07 Haze, Methane and Para-hydrogen on Uranus and Neptune, 2001-2007: Results from an Analysis of Near-IR Spectra**
Michael Roman¹, Don Banfield¹, Peter Gierasch¹, Barney Conrath¹, Daphne Stam²
¹Cornell University, Ithaca, NY, United States. ²Technical University of Delft, The Hague, Netherlands.

507 TNOs and Centaurs 1: Physical and Surface Properties

Oral Session 11:20 AM to 12:05 PM in Plaza ABC

Chair: Alex Parker & Anne Verbiscer

- 507.01 Ultra-red TNOs: a peek into their compositional history**
Cristina M. Dalle Ore^{1,2}, Dale P. Cruikshank², Jeffrey N. Cuzzi², Antonella Barucci³, Joshua P. Emery⁴
¹SETI Institute, Mountain View, CA, United States. ²NASA Ames, Moffett Field, CA, United States. ³LESIA, Observatoire de Paris, Meudon, France. ⁴University of Tennessee, Knoxville, TN, United States.
- 507.02 Atmospheres on Volatile-Bearing Kuiper Belt Objects**
Leslie Young¹, William B. McKinnon²
¹Southwest Research Inst., Boulder, CO, United States. ²Washington University, Saint Louis, MO, United States.
- 507.03 IR Measurements of Icy Solids of the Outer Solar System: A New Spectral Database**
Reggie L. Hudson¹, Marla H. Moore¹, Robert F. Ferrante², Perry A. Gerakines¹, Mark J. Loeffler¹
¹NASA Goddard Space Flight Center, Greenbelt, MD, United States. ²US Naval Academy, Annapolis, MD, United States.
- 507.04 Short-term variability of binary and non-binary Trans-Neptunian Objects**
Audrey Thirouin¹, Keith S. Noll², Adriano Campo Bagatin³, Jose L. Ortiz Moreno¹, Nicolas Morales¹
¹Instituto de Astrofísica de Andalucía (IAA-CSIC), Granada, Spain. ²NASA-GSFC, Greenbelt, MD, United States. ³Universidad de Alicante, Alicante, Spain.

FRI

508 TNOs and Centaurs 2: Trojans, Albedo, Size Distribution

Oral Session 01:30 PM to 03:05 PM in Plaza ABC

Chair: Susan Benecchi & Chadwick Trujilo

- 508.01 Characterizing the Neptune Trojan Orbit Distribution**
Alex H. Parker^{1,2}
¹UC Berkeley, Berkeley, CA, United States. ²Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, United States.
- 508.02 The first known Uranian Trojan and the frequency of temporary giant-planet co-orbitals**
Sarah Greenstreet¹, Mike Alexandersen¹, Brett Gladman¹, J. Kavelaars², Jean-Marc Petit³, Stephen Gwyn²
¹University of British Columbia, Vancouver, BC, Canada. ²National Research Council of Canada, Victoria, BC, Canada. ³Institut UTINAM, CNRS-UMR 6213, Observatoire de Besançon, Besançon Cedex, France.
- 508.03 Capture Of Trojans By Jumping Jupiter**
David Nesvorný¹, David Vokrouhlický², Alessandro Morbidelli³
¹SWRI, Boulder, CO, United States. ²Institute of Astronomy, Prague, Czech Republic. ³Observatoire de la Côte D'Azur, Nice, France.

508.04 A Herschel-PACS view of 16 Centaurs

Rene Duffard¹, Noemi Pinilla-Alonso^{1,2}, Pablo Santos-Sanz¹, Esa Vilenius³, Jose Luis Ortiz¹, Thomas Mueller³, Sonia Fornasier⁴, Emmanuel Lellouch⁴, M. Mommert⁵, A. Pal⁶, C. Kiss⁶, M. Mueller⁷, J. Stansberry⁸, A. Delsanti⁹, N. Peixinho^{10,11}
¹Instituto de Astrofísica de Andalucía - CSIC, Granada, Granada, Spain. ²Department of Earth and Planetary Sciences, University of Tennessee, ¹⁴¹² Circle Dr, Knoxville TN ³⁷⁹⁹⁶⁻¹⁴¹⁰ USA, Tennessee, TN, United States. ³Max-Planck-Institut für extraterrestrische Physik, Garching, Germany. ⁴LESIA-Observatoire de Paris, CNRS, UPMC Univ. Paris ⁶Univ. Paris-Diderot, Paris, Paris, France. ⁵Deutsches Zentrum für Luft- und Raumfahrt e.V., Institute of Planetary Research, Berlin, Berlin, Germany. ⁶Konkoly Observatory of the Hungarian Academy of Sciences, Budapest, Budapest, Hungary. ⁷SRON, Netherlands Institute for Space Research, Low Energy Astrophysics, Groningen, Netherlands. ⁸Stewart Observatory, The University of Arizona, Tucson, AZ, United States. ⁹Laboratoire d'Astrophysique de Marseille, CNRS & Université de Provence, Marseille, France. ¹⁰Center for Geophysics of the University of Coimbra, Geophysical and Astronomical Observatory of the University of Coimbra, Coimbra, Portugal. ¹¹Unidad de Astronomía de la Universidad de Antofagasta, Antofagasta, Chile.

508.05 TNOs are Cool! Summary Results from the Herschel Key Programme

John A. Stansberry¹, Thomas Müller³, Emmanuel Lellouch⁴, Antonella Barucci⁴, Sonia Fornasier⁴, Csaba Kiss⁸, Pedro Lacerda², Tanya Lim⁵, Michael Mommert^{7,9}, Jose-Luis Ortiz⁶, Andras Pal⁸, Pablo Santos-Sanz⁶, Esa Vilenius³
¹Space Telescope Science Institute, Baltimore, MD, United States. ²Queen's University Belfast, Belfast, Ireland. ³Max Planck Institute, Garching, Germany. ⁴Observatoire de Paris-Meudon, Paris, France. ⁵Rutherford Appleton Labs, Didcot, United Kingdom. ⁶IAA-CSIC, Granada, Spain. ⁷Northern Arizona University, Flagstaff, AZ, United States. ⁸Konkoly Observatory, Budapest, Hungary. ⁹German Aerospace Center (DLR), Berlin, Germany.

Contributing teams: 27 more members of the Herschel 'TNOs Are Cool!' team

508.06 Centaurs and Scattered Disk Objects in the Thermal Infrared: Analysis of WISE/NEOWISE Observations

James M. Bauer^{1,2}, Tommy Grav³, A. K. Mainzer¹, Joseph R. Masiero¹, Erin Blauvelt¹, Rachel Stevenson¹, Emily Kramer^{1,4}, Yan R. Fernandez⁴, C. M. Lisse⁵, Roc M. Cutri², Paul R. Weissman¹, John W. Dailey², Frank J. Masci², Russel Walker⁶, Adam Waszczak⁷, Carrie R. Nugent¹, Karen J. Meech^{8,9}, Andrew Lucas², George Pearman^{2,10}, Ashlee Wilkins¹¹, Jessica Watkins¹², Shrinivas Kulkarni¹³, Edward L. Wright¹⁴
¹Jet Propulsion Lab., Pasadena, CA, United States. ²Infrared Processing and Analysis Center, California Institute of Technology, Pasadena, CA, United States. ³Planetary Science Institute, Tucson, AZ, United States. ⁴Department of Physics, University of Central Florida, Orlando, FL, United States. ⁵Applied Physics Laboratory, Johns Hopkins University, Laurel, MD, United States. ⁶Monterey Institute for Research in Astronomy, Marina, CA, United States. ⁷Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, CA, United States. ⁸Institute for Astronomy, University of Hawaii, Manoa, HI, United States. ⁹NASA Astrobiology Institute, Institute for Astronomy, University of Hawaii, Manoa, HI, United States. ¹⁰University of California, Berkeley, Berkeley, CA, United States. ¹¹Dept. of Astronomy, Univ. of Maryland, College Park, MD, United States. ¹²Institute for Planets and Exoplanets, University of California, Los Angeles, CA, United States. ¹³Division of Mathematics, Physics, and Astronomy, California Institute of Technology, Pasadena, CA, United States. ¹⁴Department of Physics and Astronomy, University of California, Los Angeles, CA, United States.

Contributing teams: WISE team, PTF team

508.07 The density of mid-sized Kuiper belt object 2002 UX25 and the formation of the dwarf planets

Michael E. Brown¹

¹Caltech, Pasadena, CA, United States.

508.08 The 5:1 Resonance as Probed by the Canada-France Ecliptic Plane Survey
Rosemary E. Pike^{1,2}, J. J. Kavelaars^{2,1}, J. M. Petit^{3,4}, B. J. Gladman⁴
¹University of Victoria, Victoria, BC, Canada. ²National Research Council of Canada, Victoria, BC, Canada. ³Institut UTINAM, CNRS-UMR 6213, Observatoire de Besancon, Besancon Cedex, France. ⁴University of British Columbia, Vancouver, BC, Canada.

508.09 Trojans and Plutinos as probes of planet building
Mike Alexandersen¹, Brett Gladman¹, J. J. Kavelaars², Jean-Marc Petit³, Stephen Gwyn², Sarah Greenstreet¹
¹University of British Columbia, Vancouver, BC, Canada. ²National Research Council of Canada, Victoria, BC, Canada. ³Institut UTINAM, Besancon, Besancon, France.

509 Jovian Planets 2: Atmospheric Dynamics and Saturn's 2010 Storm

Oral Session 01:30 PM to 03:00 PM in Plaza E

Chair: Glenn Orton & Amy Simon-Miller

509.01 Off-equatorial jets in Jupiter's and Saturn's atmospheres
Junjun Liu¹, Tapio Schneider^{2,1}
¹Caltech, Pasadena, CA, United States. ²ETH Zurich, Zurich, Switzerland.

509.02 Modeling the Transition From Jets to Polar Turbulence in Giant Planet Atmospheres
Nicholas Heavens¹, Kunio Sayanagi¹
¹Hampton University, Hampton, VA, United States.

509.02 Modeling the Transition From Jets to Polar Turbulence in Giant Planet Atmospheres
Nicholas Heavens¹, Kunio Sayanagi¹
¹Hampton University, Hampton, VA, United States.

509.03 Atmospheric Circulation of Highly Tilted Planets
Michael Sussman¹, Adam P. Showman¹
¹LPL / University of Arizona, Tucson, AZ, United States.

509.04 Global climate modeling of Saturn's atmosphere: fast and accurate radiative transfer and exploration of seasonal variability
Sandrine Guerlet¹, Aymeric Spiga¹, Melody Sylvestre^{1,2}, Thierry Fouchet², Ehouarn Millour¹, Robin Wordsworth³, Jeremy Leconte¹, François Forget¹
¹LMD/IPSL, Paris, France. ²LESIA/Observatoire de Paris, Meudon, France. ³University of Chicago, Chicago, IL, United States.

509.06 Cassini ISS Analysis of Saturn's Northern High-Latitudes and the Aftermath of the 2010 Great Storm
Kunio M. Sayanagi¹, Shawn P. Ewald², Ulyana A. Dyudina², Andrew P. Ingersoll²
¹Hampton University, Hampton, VA, United States. ²California Institute of Technology, Pasadena, CA, United States.

509.07 IRTF/TEXES observations of Saturn's stratospheric beacon
Thierry Fouchet¹, Thomas K. Greathouse², Matthew J. Richter³, John Lacy⁴, Leigh Fletcher⁵, Aymeric Spiga⁶
¹Observatoire de Paris, Meudon, France. ²SWRI, San Antonio, TX, United States. ³University of California, Davis, CA, United States. ⁴University of Texas, Austin, TX, United States. ⁵University of Oxford, Oxford, United Kingdom. ⁶Institut Pierre Simon Laplace, Paris, France.

509.08 Evidence for Ammonia and Water Ices as the Primary Components of Cloud Particles in Saturn's Great Storm of 2010-2011
Lawrence A. Sromovsky¹, Kevin H. Baines¹, Patrick M. Fry¹
¹Univ. of Wisconsin, Madison, Madison, WI, United States.

509.09 Modeling Saturn's Giant Storms: Water, Ammonia, and the 30-Year Periodicity**Cheng Li¹**, Andrew P. Ingersoll¹¹California Institute of Technology, Pasadena, CA, United States.**510 Origins 2: Giants and Pebbles****Oral Session 01:30 PM to 03:10 PM in Plaza F****Chair: Katherine Kretke & Jens Teiser****510.01 Enhancement of the Accretion of Jupiter's Core by a Voluminous Low-Mass Envelope****Jack J. Lissauer¹**, Gennaro D'Angelo¹, Stuart J. Weidenschilling², Peter Bodenheimer³, Olenka Hubickyj^{1,3}¹NASA Ames Research Center, Moffett Field, CA, United States. ²Planetary Science Institute, Tucson, AZ, United States. ³University of California, Santa Cruz, CA, United States.**510.02 On the Minimum Core Mass for Giant Planet Formation****Andrew Youdin¹**, Ana Piso²¹JILA, CU Boulder, Boulder, CO, United States. ²Harvard University, Cambridge, MA, United States.**510.03 Pebble formation at the water ice line****Katrin Ros¹**, Anders Johansen¹¹Department of astronomy and theoretical physics, Lund University, Lund, Sweden.**510.04 Formation and Composition of Giant Planets by Pebble Accretion****Michiel Lambrechts¹**, Anders Johansen¹, Alessandro Morbidelli²¹Lund University, Lund, Sweden. ²Observatoire de la Côte d'Azur, Nice, France.**510.05 Gas Accretion by Giant Planets: 3D Simulations of Gap Opening and Dynamics of the Circumplanetary Disk****Alessandro Morbidelli¹**, Judit Szulagyi², Aurelien Crida², Takayuki Tanigawa³, Elena Lega¹, Frederic Masset⁴, Bertram Bitsch¹¹CNRS, Nice, Cedex ⁴France, France. ²Universite' de Nice - Sophia Antipolis, Nice, France. ³Hokkaido University, Sapporo, Japan. ⁴Universidad Nacional Autonoma de Mexico, Mexico City, Mexico.**510.06 Giant Planet Formation with Pebble Accretion****John E. Chambers¹**¹Carnegie Inst. of Washington, Washington, DC, United States.**510.07 Terrestrial Planet Formation in a protoplanetary disk with a local mass depletion: A successful scenario for the formation of Mars****André Izidoro^{1,2}**, Nader Haghighipour^{3,4}, Othon Cabo Winter¹, Masayoshi Tsuchida⁵¹UNESP - Guaratingueta, Guaratingueta, SP, Brazil, Brazil. ²Observatoire de la Côte d'Azur, Nice, France. ³UH - Institute for Astronomy, Honolulu, HI, United States. ⁴UH - NASA Astrobiology Institute, Honolulu, HI, United States. ⁵UNESP - IBILCE, Sao Jose do Rio Preto, Brazil.**510.08 Experimental Studies of Low-Velocity Dust Aggregate Collisions****Adrienne Dove¹**, Joshua Colwell¹, Christopher Vamos¹, Christopher Tiller¹, Allyson Whitaker¹¹University of Central Florida, Orlando, FL, United States.**510.09 Re-accretion Efficiencies in Small Impactor – Large Target Collisions****Tim Jankowski¹**, Gerhard Wurm¹, Teiser Jens¹¹Institut for Experimental Astrophysics, University Duisburg-Essen, Duisburg, NRW, Germany.

511 TNOs and Centaurs 3: Dynamics and Occultations

Oral Session 03:30 PM to 05:00 PM in Plaza ABC

Chair: John Stansberry & Michael Brown

- 511.01 The size-distribution of scattering TNOs observed by La Silla - QUEST**
David L. Rabinowitz¹, Megan E. Schwamb¹, Ellie Hadjiyska¹
¹*Yale Univ., New Haven, CT, United States.*
- 511.02 The incremental size distribution of scattered disk TNOs from that of JFCs between 0.2 and 6 km effective radius.**
Michael J. Belton¹
¹*Belton Space Explor. Initiatives, LLC, Tucson, AZ, United States.*
- 511.03 A dynamical pathway to produce the Hot Kuiper Belt orbits**
Pedro Ivo I. Brasil^{1,2}, Rodney S. Gomes^{3,2}, David Nesvorný²
¹*Instituto Nacional de Pesquisas Espaciais - INPE, São José dos Campos, SP, Brazil.* ²*Southwest Research Institute - SwRI, Boulder, CO, United States.* ³*Observatório Nacional - ON, Rio de Janeiro, RJ, Brazil.*
- 511.04 Beyond the Kuiper Belt Edge: Sednoids and the Inner Oort Cloud**
Scott S. Sheppard¹, Chad Trujillo²
¹*Carnegie Inst. of Washington, Washington, DC, United States.* ²*Gemini, Hilo, HI, United States.*
- 511.05 A Search for Extremely Distant Sedna-Like Objects Using DECam**
Chadwick A. Trujillo¹, Scott S. Sheppard²
¹*Gemini Obs., Hilo, HI, United States.* ²*Carnegie Institution of Washington, Washington, DC, United States.*
- 511.06 The UT 8 February 2013 Sila-Nunam Mutual Event & Future Predictions**
Susan D. Benecchi^{1,2}, Keith Noll³, Audrey Thirouin⁴, Erin Ryan³, Will Grundy⁵, Anne Verbiscer⁶, Alan Doressoundiram⁷, Daniel Hestroffer⁷, Rachel Beaton⁶, David Rabinowitz⁸, Nancy Chanover⁹
¹*Department of Terrestrial Magnetism, Carnegie Institution of Washington, Herndon, VA, United States.* ²*Planetary Science Institute, Tucson, AZ, United States.* ³*NASA Goddard Space Flight Center, Greenbelt, MD, United States.* ⁴*Instituto de Astrofísica de Andaluc a, Granada, Spain.* ⁵*Lowell Observatory, Flagstaff, AZ, United States.* ⁶*University of Virginia, Charlottesville, VA, United States.* ⁷*Observatoire de Paris, Cedex, France.* ⁸*Yale University, New Haven, CT, United States.* ⁹*New Mexico State University, Las Cruces, NM, United States.*
- 511.07 High Precision Lightcurves of A Mutual Event of Transneptunian Binary (79360) Sila-Nunam From Gemini Observatory**
Anne J. Verbiscer¹, Will Grundy², Susan Benecchi³, David Rabinowitz⁴, Michael F. Skrutskie¹
¹*University of Virginia, Charlottesville, VA, United States.* ²*Lowell Observatory, Flagstaff, AZ, United States.* ³*Carnegie Institution, Washington, DC, United States.* ⁴*Yale University, New Haven, CT, United States.*
- 511.08 TNO Occultations with RECON**
Marc W. Buie¹, John M. Keller²
¹*Southwest Research Institute, Boulder, CO, United States.* ²*California Polytechnic State University, San Luis Obispo, CA, United States.*
- 511.09 Predicting Occultations by Kuiper Belt Objects**
Wesley Fraser¹, Stephen Gwyn¹, Chad Trujillo², Michael E. Brown⁴, Jj Kavelaars¹, Andrew Stephens², German Gimeno³
¹*Herzberg Institute of Astrophysics, Victoria, BC, Canada.* ²*Gemini North, Hilo, HI, United States.* ³*Gemini South, La Serena, Chile.* ⁴*California Institute of Technology, Pasadena, CA, United States.*

512 Jovian Planets 3: Magnetospheres, Upper Atmospheres, and Interiors

Oral Session 03:30 PM to 05:00 PM in Plaza E

Chair: Scott Edgington & Gordon Bjoraker

- 512.01 Quasi-Periodic Electron Bursts in the Jovian Magnetosphere**
Andrew J. Steffl¹, Adam B. Shinn¹
¹Southwest Research Institute, Boulder, CO, United States.
- 512.02 The Variability of Saturn's Plasma Torus**
John D. Richardson¹, H. Todd Smith²
¹MIT, Cambridge, MA, United States. ²APL, Laurel, MD, United States.
- 512.03 The thermosphere of Saturn from Cassini UVIS occultations**
Tommi Koskinen¹, Bill R. Sandel¹, Roger V. Yelle¹, Fernando J. Capalbo², Gregory M. Holsclaw³, Bill E. McClintock³, Scott Edgington⁴
¹Lunar and Planetary Laboratory, Tucson, AZ, United States. ²Laboratoire Interuniversitaire des Systemes Atmospheriques, Universites Paris Est Creteil et Paris Diderot, Creteil, France. ³Laboratory for Atmospheric and Space Physics, Boulder, CO, United States. ⁴Jet Propulsion Laboratory, Pasadena, CA, United States.
- 512.04 The Ionosphere of Saturn as Observed by Cassini Radio Science**
Arvydas J. Kliore¹, Andrew F. Nagy², Aseel Anabtawi¹
¹JPL, Pasadena, CA, United States. ²Univ. of Michigan, Ann Arbor, MI, United States.
- 512.05 Cassini UVIS Saturn Auroral Images from the 2013 HST/Cassini Campaign**
Wayne R. Pryor¹, Alain Jouchoux², Larry Esposito², Frank Crary², Katerina Radioti³, Denis Grodent³, Jacques Gustin³, Jean-Claude Gerard³, William Kurth⁴, Don Mltchell⁵, Jonathan Nichols⁶, Sarah Badman⁶
¹Central Arizona College, Coolidge, AZ, United States. ²LASP/University of Colorado, Boulder, CO, United States. ³University of Liege, Liege, Belgium. ⁴University of Iowa, Iowa City, IA, United States. ⁵APL/JHU, Laurel, MD, United States. ⁶University of Leicester, Leicester, United Kingdom.
Contributing teams: Cassini UVIS Team, Hubble Auroral Campaign Team
- 512.06 Saturn's Ring Rain: Initial Estimates of Ring Mass Loss Rates**
Luke Moore¹, James O'Donoghue², Ingo Mueller-Wodarg³, Michael Mendillo¹
¹Boston Univ., Boston, MA, United States. ²University of Leicester, Leicester, United Kingdom. ³Imperial College London, London, United Kingdom.
- 512.06 Saturn's Ring Rain: Initial Estimates of Ring Mass Loss Rates**
Luke Moore¹, James O'Donoghue², Ingo Mueller-Wodarg³, Michael Mendillo¹
¹Boston Univ., Boston, MA, United States. ²University of Leicester, Leicester, United Kingdom. ³Imperial College London, London, United Kingdom.
- 512.07 Kronoseismology: Determining Saturn's acoustic normal mode frequencies using density waves in the rings.**
Matthew M. Hedman^{1,2}, Philip D. Nicholson¹
¹Cornell Univ., Ithaca, NY, United States. ²University of Idaho, Moscow, ID, United States.
- 512.08 Giant Planet Seismology: Constraining the Interior Structure of Saturn from Waves in its Rings**
Jim Fuller¹, Dong Lai¹, Natalia Shabalta¹
¹Cornell University, Ithaca, NY, United States.
- 512.09 Diamond and other forms of elemental carbon in Saturn's deep atmosphere**
M. L. Delitsky¹, K. H. Baines²
¹California Specialty Engineering, Flintridge, CA, United States. ²University of Wisconsin, Madison, WI, United States.

513 Origins 3: Disks, Moon, and Terrestrial Planets

Oral Session 03:30 PM to 05:00 PM in Plaza F

Chair: Aurelien Crida & Glen Stewart

513.01 Collision Dynamics of Decimeter Bodies

Johannes Deckers¹, Jens Teiser¹

¹Universität Duisburg-Essen, Duisburg, Germany.

513.02 Mercury-like Planets: Separating Metals and Silicates by Photophoresis

Gerhard Wurm¹, Mario Tieloff², Heike Rauer^{3,4}, Markus Kuepper¹

¹Fakultät für Physik, Universität Duisburg-Essen, Duisburg, Germany. ²Institut für Geowissenschaften, Universität Heidelberg, Heidelberg, Germany. ³Institut für Planetenforschung, Extrasolare Planeten und Atmosphären, DLR, Berlin, Germany. ⁴Zentrum für Astronomie und Astrophysik, Technische Universität Berlin, Berlin, Germany.

513.03 The Tethered Moon

Kevin Zahnle¹, Roxana Lupu², Bruce Fegley³, Mark Marley¹, Norman Sleep⁴, Anthony Dobrovolskis²

¹NASA Ames Research Center, Moffett Field, CA, United States. ²SETI Institute, Mountain View, CA, United States. ³Washington University, St. Louis, MO, United States. ⁴Stanford University, Stanford, CA, United States.

513.04 Accretion of the Moon from non-canonical impacts

Julien Salmon¹, Robin M. Canup¹

¹Southwest Research Institute, Boulder, CO, United States.

513.05 Formation of the Terrestrial Planets from an Annulus - LIPAD Simulations with Dynamics, Accretion and Fragmentation

Kevin J. Walsh¹, Harold F. Levison¹

¹Southwest Research Institute, Boulder, CO, United States.

513.06 Small mass planets migration in radiative discs

Elena Lega¹, Aurelien Crida¹, Bertram Bitsch¹, Alessandro Morbidelli¹

¹Observatoire de La Côte D'Azur, Nice, Cedex ⁴France, France.

513.07 Structure of evolving Accretion Discs and their Implications to the Formation of Planetary Cores

Bertram Bitsch¹, Alessandro Morbidelli¹, Aurélien Crida¹, Elena Lega¹

¹OCA, Nice, France.

513.08 Exposing the Long Lives of Circumplanetary Disks

Yuri Fujii¹, Satoshi Okuzumi^{1,2}, Takayuki Tanigawa³, Shu-ichiro Inutsuka¹

¹Nagoya University, Nagoya, Aichi, Japan. ²Tokyo Institute of Technology, Tokyo, Tokyo, Japan. ³Hokkaido University, Sapporo, Hokkaido, Japan.

513.09 Constraining the Feasibility of Planet Formation in Close Binaries

Hannah Jang-Condell¹

¹University of Wyoming, Laramie, WY, United States.

AUTHORS INDEX

Authors Index

- Abbot, Dorian S. 103.05
 Abe, Shinsuke 112.22
Abell, Paul A. 208.30, 413.25
 Aceves, Hector 113.06, 415.05
 Achterberg, Richard K. 207.02, 305.06, 305.09, 312.07, 312.12, 312.16
 Adamkovics, Mate 207.01, 312.19, **415.12**, 506.03
 Adams, Dewey 211.27
 Adams, Elisabeth R. 204.03
 Adams, Fred C. 300.01
 Adams, Melissa 313.27
 Adriani, Alberto 312.08
 Agarwal, Jessica 201.05
 Agol, Eric 200.01
 Aharonson, Oded 107.03, 312.22, 405.07
 Albers, Nicole **210.13**
 Albin, Edward F. **117.08**
 Albrecht, Simon 105.02
 Alcock, Charles **211.23**, 414.08
 Alerstam, Erik 211.18
 Alexander, Claudia 413.01
 Alexandersen, Mike 508.02, **508.09**
 Ali Dib, Mohamad **415.04**
 Ali-Lagoa, Victor **205.08**
 Alibay, Farah 211.29
 Allen, Lori **112.19**, 112.20, 208.24
 Altobelli, Nicolas 206.04, 402.02, 413.01
 Altwegg, Kathrin 505.08
 Alvarez, Federico 405.06
 Alvarez-Candal, Alvaro 101.01
 Ammannito, Eleonora 112.24
 Anabtawi, Aseel 512.04
 Andersen, Christian **313.27**
 Anderson, Carrie **207.02**
 Anderson, Ryan 400.07
 Andersson, Laila 313.24
 Andert, Thomas P. 118.04, 310.06, **313.01**
 Anglada-Escude, Guillem 204.02
 Angusteijn, Thomas 101.03
 Anne, Verbiscer 406.05, 406.05
 Annen, John 405.03
 Annex, Andrew **417.02**
 Ansdell, Megan 407.03, **413.31**
 Antonsen, Adrienne K. 113.05, 206.09
 Appere, Thomas 207.01
 Araki, Hiroshi 112.22, 115.01
 Araujo, Mary Frances 211.04
 Arevalo, Ricardo D. 211.19
 Arney, Giada **202.04**
 Arnold, Jessica 400.08
 Arnold, Steve 211.27
 Arnold, Walter 413.06
 Arp, Uwe 418.05
 Arras, Phil 204.03
 Arvidson, Raymond 400.03, 405.08
 Asmar, Sami **208.04**, 500.04
 Asphaug, Erik **503.04**
 Assafin, Marcelo 112.04, 404.02
 Atreya, Sushil K. 312.15, 313.02, 405.02, **410.01**
 Aurnou, Jonathan M. 312.24, 312.24
 Axelrod, Tim 112.19
 Babcock, Bryce A. 310.01, 404.01
 Badman, Sarah 512.05
 Bagenal, Fran 211.04, 310.04, 310.04, **418.04**
 Bailey, Jeremy 202.04
 Baines, Kevin H. **118.08**, 207.01, 302.04, 309.05, 309.08, 312.09, 312.15, 312.16, 312.17, 403.04, 406.04, 509.08, 512.09
 Bair, Allison N. 407.05
 Bairstow, Sarah 211.24
 Bakos, Gaspar Á. 113.08, 209.15
 Ballouz, Ronald **301.03**
 Balsiger, Hans 505.08
 Bampasidis, Georgios 305.09
 Bandfield, Joshua L. 107.01, 107.02, 107.03, 400.08
 Bandos, Tatyana 202.08
 Banfield, Don **405.04**, 506.07
 Bannister, Michele **414.10**
 Bardeen, Charles G. 118.07
 Barge, Pierre 201.04
 Barlow, Nadine G. **400.02**
 Barnes, Jason W. **207.01**, 302.04, 302.05, 309.05, 309.08
 Barnes, Jeffrey R. 313.09
 Barnes, Rory 113.05
 Barnouin, Olivier 301.06
 Barraclough, Bruce 400.07
 Barrera, Luis 303.03
 Barth, Erika L. 506.04, **506.05**
 Barthelemy, Maud 413.01
 Barucci, Maria Antonietta 201.02, 205.09, 205.12, 507.01, 508.05
 Bass, Deborah 211.17, 211.17
 Batalha, Natalie M. 209.02
 Batcheldor, D. 404.01
 Battams, Karl 407.01
 Batygin, Konstantin 113.01, 113.02, 113.02, 113.09, **300.01**, 300.02
 Baù, Giulio **112.14**

- Baudino, Jean-Loup **209.09**
- Bauer, James M.
101.08, 201.06, 201.06,
201.08, 208.20, 208.21,
407.06, 413.11, 413.12,
413.31, **508.06**
- Baumgardner, Jeffrey
102.07
- Bean, Jacob 105.06
- Beaton, Rachel 511.06
- Beaty, Dave 211.17, 211.17
- Beauchamp, Jack L. 309.07
- Becker, Juliette **113.09**
- Becker, Kris J. 208.01
- Becker, Thorsten W. 403.01
- Becker, Tracy M. **206.11**,
208.08
- Beeson, Charlie 208.24
- Beeson, Charlotte 112.25
- Begun, Jason 407.01
- Behrend, Raoul 304.08
- Behrens, John 211.22
- Beichman, Chas 204.02
- Bell, D. 404.01
- Bell, Jared M. 305.07,
305.07, 313.12
- Bell, Jordan 312.07
- Bell, Maureen 201.01
- Belton, Michael J. **511.02**
- Benecchi, Susan D. 101.03,
304.03, **511.06**, 511.07
- Benedict, G. Fritz 113.05
- Benkhoff, Johannes
301.06, 413.32
- Benna, Mehdi 211.19
- Benneke, Björn 105.04
- Benner, Lance A.
M. **101.02**, 101.04, 101.05,
101.09, 201.01, 208.08
- Berger, Eve L. 413.28
- Berger, Gilles 400.07
- Bergonio, Justin 303.03
- Bernardi, Fabrizio 205.12
- Bernstein, Gary 414.03
- Berry, K. L. 404.01
- Bertaux, Jean-Loup 313.15,
313.25, 500.07
- Berthelier, Jean-Jacques
505.08
- Berthier, Jerome 112.07
- Berube, Micheal 113.13
- Beshore, Edward 106.02,
112.18
- Besse, Sebastien **301.06**,
502.06
- Besserer, Jonathan **403.01**
- Betancourt, Francisco
113.06
- Bézard, Bruno 209.09,
305.04, 305.06
- Bhardwaj, Anil 502.08
- Bhattacharyya, Do-
lon **313.15**
- Bianco, Federica B. **211.06**,
404.02, 414.07
- Biddle, Lauren I.
113.13, **113.14**
- Bills, Bruce G. 208.04
- Bingaman, Gary 211.22
- Binzel, Richard P. 101.03,
201.04, **208.07**, 208.30,
304.06, 304.06
- Bird, Michael K. 118.04,
310.06
- Bird, P. 404.01
- Birkby, Jayne 105.02
- Birlan, Mirel 201.04
- Birthwhistle, Peter 101.03
- Bitsch, Bertram 510.05,
513.06, 513.06, **513.07**
- Bitz, Cecilia 103.04
- Biver, Nicolas 407.04,
413.17, 502.01, **502.03**,
505.05, 505.05
- Bjoraker, Gordon L. 312.12,
312.15, **506.03**, 506.06
- Blacksberg, Jor-
dana **211.18**
- Blalock, John J. **312.10**
- Bland, Michael T.
501.06, **501.08**
- Blaney, Diana L. **400.07**
- Blauvelt, Erin 508.06
- Bleacher, Lora 100.01
- Blecic, Jasmina 113.08,
209.01, 209.12, 209.15,
209.16
- Blecka, Maria 413.04,
413.07
- Blewett, David T. 102.05
- Blum, Juergen 205.03
- Blumenthal, Sarah D.
105.08, **209.12**
- Boccaletti, Anthony 209.09
- Bockelée-Morvan, Domi-
nique 201.02, 413.02,
413.17, 502.01, 502.03,
505.05, 505.05
- Bodenheimer, Peter
510.01
- Bodewits, Dennis 407.04,
407.08, **407.09**
- Boehnhardt, Hermann
303.03
- Boice, Daniel C. **413.32**
- Boissier, Jeremie 502.01,
502.03
- Bolin, Bryce T. 106.02,
112.18, 208.22,
401.02, **401.03**
- Bonev, Boncho P.
413.16, **413.18**, 413.20,
413.23, 502.02
- Bonnefoy, Mickael 209.09
- Borncamp, D. 404.02
- Borucki, William J. **204.04**
- Bosh, Amanda S.
310.01, **404.01**, 414.07
- Boslough, Mark **110.01**
- Boss, Alan 204.03
- Bottke, William F. 102.03,
106.02, **106.06**, 205.02,
205.04
- Bottom, Michael 204.02
- Bougher, Stephen W.
118.05, 313.19
- Boursier, Corinne 207.05
- Bowell, Edward 304.05
- Bowens-Rubin, R. 404.01
- Bowman, M. Oliver 105.08,
209.12, 209.15, **209.16**
- Boyce, Joseph M. 400.02
- Boynnton, William V. 107.04
- Bradley, E. Todd 112.03,
210.03, **210.09**

- Brain, David A. 118.02, 118.02, 118.10, 202.06, 202.06, **313.16**, 500.08
- Branduardi-Raymont, Graziella 211.01
- Brasil, Pedro Ivo I. **511.03**
- Bratcher, Allison **210.12**
- Bratsolis, Emmanuel 302.09
- Brecht, Amanda S. 118.05, 118.12, **500.06**
- Bridges, John C. 400.07
- Bridges, Nathan 400.07
- Bright, L. P. 404.01
- Brinckerhoff, William B. 211.19
- Brinkworth, Carolyn 204.02
- Britt, Daniel T. 112.03, 208.18
- Brockwell, Tim 418.08
- Brogi, Matteo 105.02
- Bromley, Benjamin C. **303.05**
- Brooks, Shawn M. **210.11**
- Brosch, Noah 304.08
- Brothers, T. C. 404.01
- Brown, Linda R. **312.03**
- Brown, Michael E. 112.19, 211.08, **508.07**, 511.09
- Brown, Peter 401.03, 402.04
- Brown, Robert H. 206.04, 207.01, 302.04, 302.09, 305.04, 309.05, 309.08, 312.09, 403.04, 406.04
- Brown, Sarah K. 312.07
- Brown, Timothy 211.06
- Broz, Miroslav **106.05**, 112.12, 304.07
- Brozović, Marina 101.02, 101.04, 101.05, **101.09**, 208.08
- Brucato, John Robert 205.12
- Brucker, Melissa **414.06**
- Bruckner, Adam 405.06
- Brugamy, Erik J. 204.01
- Brunner, Anna 313.03, 400.06
- Bryden, Geoffrey 113.16
- Bryson, Stephen T. 204.04, 209.02
- Bryssinck, Erik 407.03
- Buch, Arnaud 400.06
- Budney, Charles 211.29
- Bugiel, Sebastian 311.04
- Buie, Marc W. 303.01, 404.02, 414.12, **511.08**
- Bullock, Mark A. 107.05, 107.05, 115.02, **115.03**
- Buratti, Bonnie J. 207.01, 302.04, 303.08, 309.05, 309.08, 312.09, 403.04, **406.04**
- Burgdorf, Martin 312.13
- Burger, Matthew H. 102.06, 114.03, **114.04**
- Burke, Christopher J. 209.02, 209.06
- Burns, Joseph A. 117.09, **206.02**, 300.09, 406.07
- Burrows, Adam 105.07, 200.01
- Burt, Brian 112.19, **112.20**, 304.02
- Bus, Schelte J. **208.05**, 211.11, 211.12, 414.07
- Busch, Michael W. 101.02, 101.04, **101.05**, 101.09, 208.30, 301.01
- Butler, Bryan J. **112.08**, 312.20, 404.03
- Buxner, Sanylyn **100.01**, **117.07**
- Byrne, Paul K. 102.05
- Byun, Yong-Ik 304.08
- Böhnhardt, Hermann 413.18, 502.02
- Cabo Winter, Othon 510.07
- Cabrera-Lavers, Antonio 101.01
- Cahoy, Kerri 209.08
- Calcutt, Simon B. 305.08
- Caldwell, Douglas A. 209.02, 209.07
- Callahan, Jason **108.01**
- Calmonte, Ursina 505.08
- Campbell, Donald B. **108.04**, 504.02
- Campbell-Brown, Margaret 402.04
- Campins, Humberto 112.05, 112.10, 205.08, 208.15
- Campo Bagatin, Adriano 507.04
- Canizo, Thea L. 117.05
- Cantor, Bruce A. 400.01
- Canup, Robin M. 513.04
- Capaccioni, Fabrizio 206.04, **413.03**, 413.04, 413.07, 417.07
- Capalbo, Fernando J. 512.03
- Carlson, Robert W. 506.01
- Carlson, Ronald C. 305.09
- Carry, Benoit 112.07, 201.02, 205.05, 208.06
- Carsenty, Uri **208.03**
- Carter, Lynn M. **107.01**
- Carveth, Carol **313.25**
- Cassidy, Timothy A. 102.06, 418.04
- Castillo-Rogez, Julie C. **302.02**, 416.03
- Catanzarite, Joseph H. 204.06
- Cates, Ian T. 113.13
- Catling, David C. 105.09
- Cauzzi, Gianna 502.05
- Cavalié, Thibault **312.14**
- Cellino, Alberto 106.07
- Cerroni, Priscilla 206.04, 417.07
- Chaffin, Michael S. **313.17**
- Chambers, John E. **510.06**, **510.06**
- Chang, Hsiang-Kuan 414.09
- Chanover, Nancy J. 118.13, 211.08, **312.05**, 502.07, 506.02, 511.06
- Chapman, Clark R. 102.03, 208.06, **208.16**
- Charbon, Edoarod 211.18

- Charbonneau, David 200.01
- Charnley, Steven B. 413.17, 413.22, 502.01
- Charnoz, Sebastien **415.14**
- Chastel, Serge 401.02
- Chatelain, Joseph **208.32**
- Chaufray, Jean-Yves 107.07, **114.01**, 313.15
- Chavez, Carlos E. **113.06**, 415.05
- Che, Congcong 400.08
- Cheng, Andrew 211.27
- Chesley, Steve R. 101.06, 106.03, **106.08**, 112.23, 208.09, 304.04
- Chesley, Steven R. 101.06, 106.03, **106.08**, 112.23, 208.09, 304.04
- Chessa, Andrea 112.14
- Chevrier, Vincent F. 302.03, 309.03, 400.04
- Chi, Brian 413.25
- Chiang, Hsin-Fang 407.03
- Chin, Gordon 107.04
- Chodas, Paul W. 106.08
- Choi, Young-Jun 304.01, 304.08
- Choukroun, Mathieu 302.08, **413.05**, 505.05, 505.05
- Christensen, Eric 112.19, 208.24, 208.30
- Christian, John 312.07
- Christou, Apostolos **106.04**
- Chuang, Yo-Ling 413.22
- Chun, Shih I. 414.09
- Chyba, Monique 401.03
- Ciardi, David 204.02
- Ciarniello, Mauro 206.04, 413.03, 413.04
- Cibulkova, Helena 106.05
- Cikota, Stefan 101.01
- Cintala, Mark J. 413.28, 413.29
- Clancy, R. Todd 202.02, **405.01**
- Clark, Benton **400.03**, 400.07
- Clark, Beth 201.01
- Clark, Roger N. 206.04, 207.01, 210.09, 302.04, 305.04, **309.05**, 309.08, 312.09, 403.04, 405.08, 406.04, 417.03, 417.04
- Clarke, Bruce 209.07
- Clarke, Bruce D. 209.02
- Clarke, John T. 313.15, 313.25
- Clarke, Tracy E. **312.01**, **312.01**
- Clegg, Ryan 211.29
- Clegg, Samuel M. 400.07
- Clifford, Stephen 211.16
- Cloutis, Edward A. 205.02, 208.01
- CoBabe-Ammann, Emily 100.01, 117.07
- Cochran, Anita L. **502.05**, 502.07
- Cochran, William D. **204.01**
- Colaprete, Anthony 107.08
- Colas, F. 404.02
- Coley, Dan 201.01
- Coley, Daniel R. 112.13
- Collette, Andrew **115.05**
- Collier Cameron, Andrew 209.16
- Colom, Pierre 502.03
- Colwell, Joshua E. 206.07, 206.11, 210.03, **210.06**, 210.07, 210.09, 210.12, 210.17, 402.03, 415.08, 415.08, 415.09, 415.13, 510.08
- Combi, Michael 313.19, 413.09
- Combi, Michael R. 114.02, 413.21, 416.02, 505.08
- Comfort, Christine **112.10**
- Connelley, Michael **211.12**
- Connelley, Michael S. 211.11
- Connolly, Harold 106.06
- Conrad, Al 208.06
- Conrath, Barney 312.16, 506.07
- Consolmagno, Guy **208.18**
- Cook, J. C. 115.02
- Cook, Jason C. **107.07**
- Cook, Kem 414.08
- Cook, Kendall L. 113.13
- Cooke, Brian 418.07
- Cooney, James **210.07**
- Cooper, John F. **210.04**, 501.05
- Cordier, Daniel **302.05**, 505.06, 505.06
- Cordiner, Martin **502.01**
- Cordiner, Martin A. 413.17
- Cordiner, Martin M. 413.22
- Cornet, Thomas 302.05
- Cornish, Timothy 211.19
- Cornwall, Carin 405.06
- Cote, Miles 209.07
- Cotto-Figueroa, Désirée **106.09**, 503.04
- Coulson, Iain M. 413.22, 502.01
- Coustenis, Athena 302.09, 305.08, **305.09**
- Cowan, Nicolas 200.01
- Cowan, Nicolas B. **103.05**
- Craig, Patricia 211.29
- Crapster-Pregont, Ellen J. 102.05
- Crary, Frank 418.04, 512.05
- Crawford, Benjamin E. 113.13
- Crawford, Sam 204.02
- Crepp, Justin R. 113.01, 113.02, 113.02
- Crichton, Daniel J. 211.26
- Crida, Aurelien **300.02**, 415.14, 510.05, 513.06, 513.06, 513.07
- Crismani, Matteo **413.09**
- Crisp, David 118.07, 202.04
- Crovisier, Jacques 201.02, 502.01, 502.03, 505.05, 505.05
- Cruikshank, D. P. 309.05
- Cruikshank, Dale P. 206.04, 403.04, 414.05, **417.04**,

- 507.01
 Cubillos, Patricio E. 113.07, 113.08, **209.01**, 209.15, 209.16
 Cuda, Jan 112.03
 Cuddy, Matthew 205.02
 Cuk, Matija **112.11**
 Cunningham, Clifford J. **108.02**
 Cunningham, Nathaniel 501.02
 Cunningham, Nathaniel J. **501.03**
 Cutri, Roc 201.06, 201.06
 Cutri, Roc M. 201.08, 508.06
 Cuzzi, Jeff N. 206.05, 210.15
 Cuzzi, Jeffrey N. 206.04, **415.07**, 507.01
 Dailey, Dean 211.15
 Dailey, John W. 508.06
 Dalba, Paul A. 406.04
 Dalle Ore, Cristina M. 206.04, 414.04, 414.05, 417.04, **507.01**
 Dalton, Heather 100.01, 117.07
 Davidsson, Bjorn **201.03**
 Davies, Ashley **302.08**
 Davies, Ashley G. 416.03
 Davis, Allen B. 310.01
 Davis, Donald R. 301.08
 Davis, M. W. 115.02
 Davis, Michael 107.05, 107.05, 211.04
 Davison, Cassy 204.02
 Day, Mackenzie 211.29
 De Beule, Caroline **405.09**
 De Keyser, Johann 505.08
 de Kleer, Katherine R. **312.19**
 de Kok, Remco **105.02**, 305.08
 de Leon, Julia **101.01**, 112.10, 205.08
 De Luise, Fiore 205.12
 de Mooij, Ernst 105.02
 de Pater, Imke 202.06, 202.06, 206.01, 312.18, 312.19, **312.20**, 506.03
 De Sanctis, Maria C. 112.24
 de Wit, Julien 200.01
 Deau, Estelle **210.16**
 deBoer, David 312.20
 Debout, Vincent **413.02**, 502.03
 Deckers, Johannes **513.01**
 Decock, Alice **502.08**, 505.06, 505.06
 Deienno, Rogerio **503.01**
 Deighan, Justin 313.21, **313.23**
 Deitrick, Russell **113.05**
 Del Genio, Anthony 305.03, 312.16
 del Rio Gaztelurrutia, Teresa 117.03
 Delbo, Marco 106.06, 112.10, 205.07, 205.08, **205.03**, 208.29, 304.02
 Delitsky, M. L. **512.09**
 Delitsky, Mona L. 118.08
 Dello Russo, Neil 413.27, 502.07
 Dello-Russo, Neil 502.03
 Delsanti, A. 508.04
 DeMeo, Francesca 101.03, 201.04, 208.07, 208.24, 208.30, 304.06, 304.06
 DeMeo, Francesca E. **205.05**
 Deming, Drake 105.04, 105.05, 105.07, 200.01, 204.03
 Demura, Hirohide 112.22
 Denevi, Brett W. 102.05, 208.01
 Denis, Damien 415.13
 Denk, Tilmann **406.08**
 Denneau, Larry 208.22, 401.02
 Dequaire, Julie **313.26**
 Dermott, Stanley F. 402.03
 Descamps, Pascal 112.07
 di Lauro, Carlo 312.03
 Dias de Oliveira, A. 404.02
 Dimare, Linda 112.14
 DiNino, Daiana 210.10
 Dirks, Greg 211.04
 DiSanti, Michael 502.07
 DiSanti, Michael A. **413.16**, 413.18, 413.20, 413.27, 502.02
 DiSanti, Michael D. 413.23
 Dissly, Richard 405.04
 Dmitriev, Vasily 205.01
 Dobrovolskis, Anthony 513.03
 Dobrovolskis, Anthony R. **112.06**
 Dodson-Robinson, Sarah E. 415.10
 Dols, Vincent 418.04
 Dombard, Andrew 406.06
 Donelan, Darsa 207.04
 Dones, Henry C. **210.10**
 Doressoundiram, Alain 414.09
 Doressoundiram, Alan 511.06
 Dotto, Elisabetta 205.12
 Douglas, Robert W. 117.09
 Dove, Adrienne **510.08**
 Draham, Robert L. 312.10
 Drake, Keith 311.01, 311.01, **311.05**
 Drossart, Pierre **211.25**, 302.09
 Drummond, Jack D. **208.06**
 Drummond, Rachel 202.07
 Duddy, Samuel R. 112.15, 304.04
 Duffard, Rene 101.01, **508.04**
 Dumas, Christophe 208.06
 Dundon, Luke 413.31
 Dunham, E. W. 404.01
 Durech, Josef 112.07, **304.05**, 304.07
 Dyar, M. D. 400.07
 Dykhuis, Melissa J. **205.04**
 Dyudina, Ulyana A. 509.06

- D'Angelo, Gennaro 510.01
 Earle, Alissa 112.19, 112.20
 Eberhard, Moebius 311.03
 Edgar, Lauren 400.07
 Edgington, Scott 512.03
 Edgington, Scott G. 210.04, **312.15**
 Edmonds, Robert **313.10**
 Edwards, Christopher S. 405.05
 Efrat, Alon 112.21
 Efroimsky, Michael 102.01
 Egan, A. F. 115.02
 Egan, Anthony 107.05, 107.05
 Egan, Anthony F. 115.03
 Ehlmann, Bethany 400.07
 Ehlmann, Bethany L. 405.05
 Eigenbrode, Jen 313.03
 Eigenbrode, Jennifer 400.06
 Eker, Zeki 304.08
 El Moutamid, Maryame **210.14**
 Elrod, Meredith K. **313.12**
 Elsila, Jamie 211.19
 Elsperman, Michael **211.16**, 211.22
 Elsperman, Michael S. 211.14
 Elvis, Martin 112.25, **208.24**, 211.01
 Emery, Josh 304.01
 Emery, Joshua 208.15, 304.02
 Emery, Joshua P. 112.04, 205.06, 205.07, 205.08, 205.11, 205.11, 208.10, 208.19, **208.31**, 414.04, 414.05, 507.01
 Encrenaz, Thérèse 202.01, 202.01, 312.14
 Endicott, Thomas 101.03, 208.30
 Endl, Michael 204.01, 204.03
 Ennico, Kimberly 303.08
 Enriquez, J. Emilio 112.04
 Erard, Stephane 208.06
 Erickson, Kristen 117.01, 117.04
 Erwin, Justin **404.05**
 Espley, Jared 500.08
 Esposito, L. W. 210.08
 Esposito, Larry 210.09, 417.05, 512.05
 Esposito, Larry W. 206.11, 210.01, **210.03**, 210.06, 210.07, 210.13, 210.17
 Espy Kehoe, Ashley J. **402.03**
 Estrada, Paul R. **210.15**
 Eterno, John 211.04
 Evans, Ian 208.24
 Evans, Janet 208.24
 Eviatar, Aharon **406.01**
 Ewald, Shawn 312.16
 Ewald, Shawn P. 509.06
 Fabrycky, Daniel 300.03, 300.07
 Faggi, Sara 413.07
 Fahnstock, Eugene G. **112.23**
 Fallows, Kathryn 118.03
 Fallows, Kathryn J. **313.22**
 Fang, Julia 208.08
 Fang, Xiaohua 313.21
 Farnham, Tony **407.08**, 505.03
 Farnham, Tony L. 407.02, 407.04, 407.07, 407.09, 413.14, 502.06
 Farnocchia, Davide **106.03**, 106.08
 Farr, Cynthia 413.25
 Fassett, Caleb I. 102.03
 Fazio, Giovanni 304.02
 Feaga, Lori M. 407.04, **407.07**, 407.08, 407.09, 502.06
 Fedorov, Andrei 202.06, 202.06
 Fegley, Bruce 513.03
 Feldman, P. D. 115.02
 Feldman, Paul 107.05, 107.05, 211.04
 Feldman, Paul D. 107.07, 107.08, 115.03, 407.04, 501.03, 505.07
 Feofilov, Artem 207.05
 Fernandes, Philip 211.29
 Fernandez, Yan R. 413.11, 508.06
 Fernandez, Yanga 414.05
 Fernandez, Yanga R. 208.08, 208.17, 301.01, 407.06, 413.12, 413.24, 413.25
 Ferrante, Robert F. 507.03
 Ferrari, Cecile 206.03
 Ferreira, Abel 302.05
 Ferrero, Andrea 208.08
 Fey, D. 404.01
 Fiege, Katherina 402.02
 Fienga, Agnes 102.08
 Fiethe, Björn 505.08
 Filacchione, Gianrico **206.04**, 413.03, 413.04, 413.07, 417.07
 Filip, Jan 112.03
 Fink, Uwe 413.04, 413.07
 Fischer, Hans-Herbert 413.06
 Fischer, Johanna-Laina 118.12
 Fischer, Sebastian 313.16
 Fitzsimmons, Alan 112.15, 208.22, 304.04
 Flandes, Alberto 413.06
 Flasar, F. 312.16
 Flasar, F. M. 207.02, 305.08
 Flasar, F. Michael 312.07
 Flasar, Frederic M. 506.06
 Fletcher, Leigh 211.04, 312.20, 509.07
 Fletcher, Leigh N. 312.07, 312.12, 312.13, 312.14, 312.15
 Fonte, Sergio 413.03
 Forget, François 405.05, 500.03, 509.04
 Forman, William 211.01
 Fornasier, Sonia 205.09, 205.12, 508.04, 508.05

- Fortney, Jonathan 105.03, 200.01, 209.08
 Fortney, Jonathan J. 200.02, 200.08, 209.15
 Foster, Andrew 209.16
 Foster, Andrew S. **113.07**, 209.15
 Fouchet, Thierry 202.01, 202.01, 506.06, 509.04, **509.07**
 Fougere, Nicolas 211.29, 413.09, **413.21**
 Fowler, Christopher M. **313.24**
 Fraeman, Abigail **405.08**
 Frahm, Rudy A. 313.24
 Fraine, Jonathan D. **105.05**
 France, Kevin 501.03
 Franco, Lorenzo 208.08
 Franz, Heather 313.03
 Franz, Heather B. 313.02, 405.02
 Fraser, George 211.01
 Fraser, Wesley **511.09**
 Freedman, Richard S. 200.02
 Freissinet, Caroline **400.06**
 French, Linda 208.32
 French, Linda M. **112.13**
 French, R. G. 404.02
 French, Richard G. 206.07
 French, Robert S. 206.01, **206.09**
 Frerking, Margaret 505.05, 505.05
 Friedson, Andrew J. 309.02, **312.23**
 Frouard, Julien 102.01
 Fry, Patrick 312.19
 Fry, Patrick M. **312.18**, 509.08
 Fuentes, Ceasr 112.19
 Fuentes, César 112.20, 304.02, **414.03**
 Fuentes, Cesar I. 208.23
 Fujihara, Gary 205.02
 Fujii, Yuri **513.08**
 Fujita, Tetsuya 406.09
 Fujiyoshi, Takuya 312.07
 Fukushima, Tomoya 413.26
 Fuller, Jim **512.08**
 Fulton, Benjamin J. 414.07
 Furesz, Gabor 414.08
 Fuselier, Stephen A. 505.08
 Futaana, Yoshifumi 202.06, 202.06
 Förster, F. 404.01
 Förster, Francisco 310.01
 Gaffey, Michael 205.02
 Gaffey, Michael J. 208.01
 Gagné, Marie-Ève **500.07**
 Gaillard, Clement 100.03, **209.03**
 Galache, Jose Luis **112.25**, 208.24
 Galád, Adrián 101.04, 208.08
 Galand, Marina 500.09
 Gao, Peter **118.07**, 204.02
 Garate-Lopez, Itziar 202.08, **202.09**
 Garcia-Munoz, Antonio 202.09
 Garry, William B. 208.01
 Gary, Bruce L. 101.04
 Gaskell, Robert W. 208.01
 Gasnault, Olivier 400.07
 Gastineau, Mickael 102.08
 Gayon-Markt, Julie 112.10
 Ge, Heming W. 117.09
 Geary, John 414.08
 Geiger, Bernhard 413.01, 413.03
 Geisert, E. 404.01
 Gellert, R. 400.03
 Georgakarakos, Nikolaos 113.06
 George, Erin **310.08**
 Gerakines, Perry A. **400.05**, 507.03
 Gerakis, Jerome 208.29
 Gerard, Jean-Claude 512.05
 Gershman, Robert 401.01
 Getty, Stephanie **211.19**
 Ghent, Rebecca R. 107.01
 Ghigo, Frank 504.02
 Gibb, Erika L. 413.18, 413.20, 502.02
 Gicquel, Adeline 413.17, **413.22**
 Gierasch, Peter 312.16, 506.07
 Gillon, M. 404.02
 Gilmore, Alan 101.03
 Gimeno, German 511.09
 Giorgini, Jon 101.09, 201.01
 Giorgini, Jon D. 101.02, 101.04, 101.05, 208.08
 Girazian, Zachary **118.03**, 211.29, 313.22
 Girouard, Forrest 209.02, 209.07
 Giuliani Winter, Silvia Maria 310.03, 310.03
 Giuliani-Winter, Silvia M. **210.02**
 Gladman, B. J. 508.08
 Gladman, Brett 414.02, 414.02, 414.10, 508.02, 508.09
 Gladstone, G. R. 107.08, 115.02
 Gladstone, G. Randall 107.07
 Gladstone, Randal 303.06
 Gladstone, Randall 115.03
 Gladstone, Randy 107.05, 107.05, **211.04**, 303.04
 Glassgold, Alfred E. 415.12
 Glavin, Daniel 400.06
 Glenar, David A. 107.08
 Glotch, Timothy **400.08**
 Goetz, Watler 400.07
 Goguen, Jay D. **403.04**, 416.01
 Golabek, Gregor J. 403.01
 Goldreich, Peter 113.03
 Goldstein, Barry 418.07
 Goldstein, David B. 418.02, 418.03

- Goldstein, Jeffrey J. 117.02
 Goldstein, Raymond 406.01
 Golubov, Oleksiy **112.16**
 Gomes, A. R. 404.02
 Gomes, Rodney S. 511.03
 Gonzalez, Gabriel 313.22
 González-Galindo, Francisco 500.07
 Goossens, Sander J. 115.01
 Gordon, Michael 208.09
 Gordon, Mitch 117.04
 Gough, Raina V. 400.04
 Granahan, James C. **208.12**
 Granvik, Mikael **106.02**, 112.18, 401.03
 Graps, Amara L. **311.06**
 Grasset, Olivier 113.10
 Grassi, Davide 312.08
 Grav, Tommy 201.06, 201.06, 201.08, 208.20, **208.21**, 413.11, 413.12, 508.06
 Grava, Cesare 107.08
 Gray, Candace L. **118.13**
 Grayzeck, Edwin J. 117.04, 211.26
 Greathouse, Thomas 107.05, 107.05, 211.04
 Greathouse, Thomas K. 107.08, **115.02**, 115.03, 509.07
 Grebowsky, Joseph 118.01
 Green, Simon 112.15
 Green, Simon F. 304.04
 Greenberg, Richard 300.03, 501.05
 Greenberg, Richard J. 205.04
 Greenhagen, Benjamin **107.02**
 Greenhagen, Benjamin T. 107.03, 107.08
 Greenstreet, Sarah **508.02**, 508.09
 Grieger, Bjoern 413.01
 Griffith, C. 309.05
 Griffith, Caitlin 305.05
 Griffith, Caitlin A. **308.01**
 Griffith, Caitlin C. 113.13
 Gritsevich, Maria **205.01**
 Grodent, Denis 512.05
 Grokhovsky, Viktor 205.01
 Groussin, Olivier 502.06
 Gruen, Eberhard 311.01, 311.01, 311.03, 311.04
 Gruet, Sébastien 505.06, 505.06
 Grundy, Will 208.30, 303.03, 511.06, 511.07
 Grundy, William 303.07
 Grundy, William M. **303.01**, 304.03, 310.04, 310.04
 Gudipati, Murthy **418.05**
 Guerlet, Sandrine 506.06, **509.04**
 Guerra, Francesca 112.14
 Guillot, Tristan 211.24
 Gulbis, Amanda 101.03
 Gulbis, Amanda A. S. 310.01, 414.07
 Gulkis, Samuel 413.05, 505.05, 505.05
 Gundlach, Bastian 205.03
 Gurwell, Mark 417.01
 Gurwell, Mark A. 112.08, **404.03**
 Gustin, Jacques 512.05
 Guzel, Eda 304.08
 Gwyn, Stephen 508.02, 508.09, 511.09
 Haas, Michael R. 204.04
 Haberle, Robert M. 200.02, 313.06, 313.11, 313.26
 Hadamcik, Edith 505.02
 Hadjiyska, Ellie 511.01
 Hagen, Norland Raphael **417.01**
 Haghighipour, Nader **103.06**, 510.07
 Hahn, Joseph M. 206.10
 Hainaut, Olivier R. 413.31
 Halekas, Jasper 313.16, 500.08
 Hall, Jennifer 209.07
 Haloda, Jakub 205.01
 Halodova, Patricie 205.01
 Hamel, Stacy 117.02
 Hamilton, Douglas P. 112.11, **302.01**
 Hamilton, John C. 313.27
 Hammel, Heidi 208.06, 312.19, 312.20
 Hammel, Heidi B. **211.08**, 211.09, 312.13, 312.18
 Hammer, Derek M. 413.10
 Hanada, Hideo 115.01
 Hand, Kevin P. 417.03
 Hanley, Jennifer **400.09**
 Hansen, Candice **417.05**
 Hansen, Gary 405.06
 Hansen, Gary B. **416.06**
 Hanus, Josef 304.05, **304.07**
 Harbison, Rebecca 210.06
 Harbison, Rebecca A. **206.12**
 Hardegree-Ullman, Kevin K. 113.13
 Hardin, Matthew 209.01
 Hardin, Matthew R. 113.07, 113.08, **209.15**
 Hardy, Ryan A. 113.07, **113.08**, 209.01, 209.15
 Hargrove, Kelsey **112.05**, 208.15
 Harker, David E. 413.08
 Harrington, Joseph **105.08**, 113.07, 113.08, 209.01, 209.12, 209.15, 209.16, 312.06
 Harris, Alan 201.01, 304.02
 Harris, Alan W. **301.07**
 Harris, Brent E. 206.08
 Harris, H. C. 404.01
 Harris, Walter 502.07
 Harris, Walter M. **211.05**
 Hartle, Richard E. 210.04
 Hartman, Joel D. 113.08, 209.15
 Hartogh, Paul 211.25, 312.14, 502.03

- Hartzell, Christine **208.13**
Hasegawa, Sunao 304.01
Hastings, D. 404.01
Hauck, Steven A. 102.02
Hayes, Alex G. 206.05
Hayes, Alexander 302.06
Hayne, Paul 107.02
Hayne, Paul O. **107.03**, 107.08
Haynes, Korey 105.07
Head, James W. 102.03, 500.03
Heath, Caitlin **118.10**
Heavens, Nicholas 313.10, **509.02**, **509.02**
Hedman, Matt M. 206.04
Hedman, Matthew 305.04
Hedman, Matthew M. 206.07, 210.04, 210.06, 403.04, **512.07**
Heimpel, Moritz H. 312.24, 312.24
Helfenstein, Paul 406.07, **416.05**, 417.02
Helled, Ravit 312.22, **415.03**
Hendrix, A. R. 115.02
Hendrix, Amanda 101.07, **107.05**, **107.05**, 417.05, 501.04
Hendrix, Amanda R. 107.08, 115.03, 406.02
Hennen, Corbin J. **309.08**
Henry, Todd 208.32
Henze, Christopher 209.07
Hergenrother, Carl 101.03
Herrera, David 112.19
Hersant, Franck 312.14
Hesman, Brigitte E. **312.12**, 506.06
Hestroffer, Daniel 511.06
Hewagama, Tilak 405.03, 506.03
Hewins, Roger 201.04
Hicks, Michael 208.09
Hicks, Michael D. 101.04, 101.06, 112.15, 208.08, 304.04
Hicks, Shannon K. 206.09
Higgins, Chuck 312.01, 312.01
Higgins, Michelle L. 117.05
Hillier, Jon K. 402.02
Hills, Kevin 101.04
Himes, Terry W. 407.07, 407.08
Hines, D. C. 211.08
Hines, Dean 211.07
Hines, Dean C. 211.09, 312.13, 407.06, **413.10**
Hinkley, Sasha 113.01, 113.02, 113.02
Hinse, Tobias C. 304.08
Hinson, David P. 118.04, 310.06, **500.04**
Hirabayashi, Masa-toshi **301.09**
Hirata, Naoyuki 112.22
Hirata, Naru 112.22
Hiriart, David 414.08
Hirn, Attila 413.06
Hiroi, Takahiro 201.04
Hirtzig, Mathieu 302.09
Ho, Paul 414.08
Hoey, William A. **418.03**
Hofmann, Ryan A. 113.13
Hofstadter, Mark 312.21, 413.05, 505.05, 505.05
Hofstadter, Mark D. **211.24**
Hoglund, Shelby 113.13
Holler, Bryan J. **310.04**, **310.04**
Hollingsworth, Jefferey L. 313.26
Hollingsworth, Jeffery 500.06
Hollingsworth, Jeffery L. 313.06, 313.11, **313.20**
Holman, Matthew 414.03
Holmes, Janelle A. 312.10
Holsclaw, Gregory M. 512.03
Homeier, Derek 105.04
Hora, Joe 304.01, 304.02
Hora, Joseph L. 205.07
Horányi, Mihály 107.09, 115.05, 115.06, **311.02**, 311.03, 311.04, 311.05, 311.07, 402.01, 416.04
Horsewood, Jerry 211.22
Horst, Sarah **305.01**
Hosseini, S. Sona 211.05
Hosseini, Sona **211.29**
Howard, Alan D. 501.09
Howard, Andrew W. 113.01, 113.02, 113.02, 113.11
Howell, Ellen 201.01, 401.03
Howell, Ellen S. 101.04, 101.06, 205.11, 205.11, 208.08, 208.17, **301.01**, 413.19
Howell, Robert R. **416.01**
Howes, Calvin 107.09
Howett, Carly **406.05**, **406.05**, 417.02
Howett, Carly J. 403.03
Hsieh, Henry 407.03
Hsieh, Henry H. **413.30**, 505.01
Hsu, Hsiang-Wen 403.02, **416.04**
Hu, Renyu 309.10
Hubbard, William B. 312.22
Hubickyj, Olenka 510.01
Hudson, Reggie 506.02
Hudson, Reggie L. 312.05, 400.05, **507.03**
Huebner, Walter F. 413.32
Hueso, Ricardo 117.03, **202.08**, 202.09
Hui, Man-To 413.13
Hulslander, Michael 117.02
Hurford, Terry **501.05**, 504.01
Hurford, Terry A. 403.03
Hurley, D. M. 115.02
Hurley, Dana 107.05, 107.05
Hurley, Dana M. 107.08
Hutchins, Michael 211.29
Hutsemékers, Damien 502.08, 505.06, 505.06

- Hviid, S. F. 208.03
 Hyodo, Ryuki **415.02**
 Hässig, Myrtha **505.08**
 Häusler, Bernd 118.03, 118.04, 118.13, 313.01, 500.04
 Ieva, Simone **205.12**
 Ikeda, Hitoshi 112.22
 Imai, Kasu 312.01, 312.01
 Imamura, Takeshi 118.04
 Ingersoll, Andrew 312.16
 Ingersoll, Andrew P. 509.06, 509.09
 Inutsuka, Shu-ichiro 513.08
 Ip, Wing-Huen 313.21
 Irwin, Patrick G. 305.08, 312.12
 Isaak, Kate 211.25
 Ishiguro, Masateru 304.01
 Ishihara, Yoshiaki 112.22, 115.01
 Ito, Takashi 503.03
 Itoh, Yoichi 208.28
 Iwata, Takahiro 115.01
 Izawa, Matthew 205.02
 Izidoro, André **510.07**
 J. Vervack, Ronald J. 413.27
 Jackiewicz, Jason 206.06
 Jackson, Brian 117.06, 117.06
 Jackson, Brian K. **204.03**
 Jacobson, Robert A. **418.06**
 Jacobson, Seth A. 301.08, **503.02**
 Jaeger, Ted 312.01, 312.01
 Jaeggli, Sarah A. 118.11
 James, David 112.19
 Jang-Condell, Hannah **513.09**
 Jankowski, Tim 405.09, **510.09**
 Jansen, Fred 413.01
 Janssen, Michael 302.06, 403.06, 413.05, 505.05, 505.05
 Janssen, Michael A. 206.05
 Jao, Joseph S. 101.02, 208.08
 Jara-Orue, Hermes 504.01
 Jarchow, Christopher 312.14
 Jaumann, R. 208.03, 309.05
 Jaumann, Ralf 112.24, 302.09
 Jean-Yves, Chaufray 313.25
 Jedicke, Robert 106.02, **112.18**, 208.22, 401.02, 401.03
 Jeffries, Stuart 211.24
 Jehin, E. 404.02
 Jehin, Emmanuel 413.27, 502.08, 505.06, 505.06
 Jenkins, Jon M. 204.04, **204.06**, 209.02, 209.06, 209.07
 Jennings, Donald 207.02
 Jennings, Donald E. 305.09, 312.12
 Jens, Teiser 510.09
 Jensen, Elizabeth E. 413.28, **413.29**
 JeongAhn, Young-min **106.01**
 Jerousek, Richard G. 210.06
 Jessup, Kandis Lea 501.02
 Jessup, Kandis-Lea **501.01**
 Jewitt, David **201.05**
 Jia, Xianzhe 114.02
 Jian, Lan K. 202.06, 202.06
 Jiang, Xun 312.11, 312.16
 Johansen, Anders **306.01**, 510.03, 510.04
 Johnson, John A. 113.01, 113.02, 113.02, 204.02
 Johnson, Robert E. 102.07, 210.04, 309.06, **310.07**, 313.21, 404.05
 Johnson, Torrence V. **103.03**, **103.03**, 302.08, 416.03
 Jones, Christen 113.13
 Jones, Christine 211.01
 Jones, John H. 313.02, 405.02
 Jontof-Hutter, Daniel **300.07**
 Joshi, Manoj 103.04
 Jouchoux, Alain 512.05
 Juhasz, Antal 311.03, 416.04
 Kaasalainen, Mikko 208.25
 Kagitani, Masato **312.25**
 Kah, Linda 400.07
 Kahre, Melinda A. 313.06, **313.11**, 313.20, 313.26, 500.06
 Kaib, Nathan 414.02, 414.02
 Kaib, Nathan A. **300.04**
 Kalirai, Jason 211.07
 Kalogerakis, Konstantinos S. **118.09**
 Kaltenegger, Lisa **103.02**, 209.11, 209.13
 Kaluna, Heather **505.01**
 Kammer, J. 305.02
 Kammer, Joshua A. **113.11**, 207.03
 Kamp, Lucas 413.05, 505.05, 505.05
 Kane, Stephen 204.02
 Kaplan, Michael 403.01
 Kaplan, Murat 304.08
 Karkoschka, Erich **305.05**, 312.18
 Kaslik, Josef 112.03
 Kaspi, Yohai 200.04, **312.22**
 Kass, David 313.13
 Kass, David M. **500.05**
 Kataria, Tiffany 200.01, **200.02**
 Kaufmann, David E. 107.05, 107.05, 107.08, 115.02
 Kavelaars, J. 508.02
 Kavelaars, J. J. 414.02, 414.02, 414.10, 508.08, 508.09
 Kavelaars, Jj 511.09
 Kawakita, Hideyo 413.26, **413.27**
 Kaydash, Vadym 413.10

- Kaynar, Suleyman 304.08
 Keane, Jacqueline V. 407.03, 413.16, **413.23**, 502.04
 Keane, James **301.04**
 Kehoe, Thomas J. 402.03
 Keihm, Stephen 505.05, 505.05
 Keihm, Steve 413.05
 Keller, John **414.12**
 Keller, John M. 511.08
 Keller, Lindsay P. 413.28, 413.29
 Keller, Uwe 112.02
 Kelley, Michael S. 205.10, 407.01, 407.02, **413.08**, 502.06
 Kelley, Mike S. 407.06
 Kempf, Sascha 311.05, 402.02, 416.04
 Kempton, Eliza 105.03, 105.06
 Kenter, Almus 211.01, 211.23
 Kenyon, Scott J. 303.05
 Kerber, Laura 500.03
 Kersten, Elke 417.06
 Kharitonova, Galina A. 312.04
 Khayat, Alain **313.14**
 Kikuchi, Fuyuhiko 115.01
 Killen, Rosemary 102.06
 Killen, Rosemary M. **107.06**, 114.03, 114.04, 115.04
 Kilmartin, Pam 101.03
 Kim, Daryl L. 413.08
 Kim, Myung-Jin **304.08**
 Kim, Sang J. **312.02**
 Kimber, Noel 405.06
 Kimura, Jun 112.22
 King, Eric M. 312.24, 312.24
 King, Penny 400.07
 Kirchoff, Michelle **417.08**, **417.08**, 501.06
 Kirienko, Galina A. 312.04
 Kirk, Randolph 302.06
 Kiss, C. 508.04
 Kiss, Csaba 508.05
 Kite, Edwin **405.07**
 Klaasen, Kenneth P. 407.07, 407.08
 Klassen, David R. **117.06**, **117.06**, **313.05**
 Klaus, Kurt 211.16, 211.22
 Klaus, Kurt K. **211.14**
 Klaus, Todd C. 204.06, 209.02, **209.07**
 Kleinboehl, Armin 313.13
 Kleinböhl, Armin 500.05
 Kletetschka, Gunther 112.03
 Kleyna, Jan 407.03
 Kliore, Arvydas J. **512.04**
 Kneissl, Thomas 208.01
 Knezević, Zoran 106.07
 Knight, Matthew M. **116.01**, **407.01**, 407.02, 407.04, 407.05, 407.06
 Knopf, William 117.04
 Knopf, William P. 211.26
 Knutson, Heather A. **105.04**, 105.05, 113.01, 113.02, 113.02, 113.11, 200.01
 Kobayashi, Hitomi **413.26**, 413.27
 Kobayashi, Masanori 112.22
 Kohout, Tomas **112.03**, 205.01
 Kollmann, Peter 210.04
 Kolokolova, Ludmilla 406.03, **505.03**
 Konidaris, Nicholas 208.24
 Kono, Yusuke 115.01
 Konopliv, Alex 208.04
 Korycansky, Donald 312.06, **417.09**
 Koskinen, Tommi **512.03**
 Kostiuk, Theodor **405.03**
 Kostko, Oleg 118.09
 Kracht, Rainer 413.13
 Kraft, Ralph 211.23
 Kraft, Ralph P. **211.01**
 Kramer, Emily 508.06
 Kramer, Emily A. 413.11, **413.12**
 Kremic, Tibor 211.27
 Kretke, Katherine A. **415.11**
 Krist, John 113.16
 Krohn, Katrin 112.24
 Krueger, Harald **413.06**
 Krugly, Yuriy N. 112.16
 Kuan, Yi-Jehng 413.22, 502.01
 Kuchner, Marc J. 300.08, 300.08
 Kuehrt, Ekkehard 407.03, 505.04
 Kuepper, Markus 513.02
 Kueppers, Michael **201.02**, 413.01, 413.03
 Kulkarni, Shrinivas 508.06
 Kunimori, Hiroo 115.01
 Kuppers, Michael 301.06
 Kurth, William 512.05
 Kusnirak, Peter 208.08
 Kutepov, Alexander **207.05**
 Kuwatani, Tatsu 403.02
 Küpper, Markus 405.09
 Kyriakopoulos, Konstantinos 302.09
 Käufl, Hans U. 502.02
 La Rocca, Daniel 112.13
 Lacerda, Pedro **414.11**, 508.05
 Lacy, John 509.07
 Lagrange, Anne-Marie 209.09
 Lai, Dong 512.08
 Lambrechts, Michel **510.04**
 LaMora, Andy 117.04
 Lamy, Philippe 407.02
 Landsman, Zoe A. **208.15**
 Langevin, Yves 112.01
 Langton, Jonathan 200.01
 Lantz, Cateline **205.09**
 Lanza, Nina 400.07

- Lara, Pamela 100.03, 209.04
- Lara, Pamela I. **209.05**
- Larson, Erik J. **309.02**
- Larson, Jessica 209.03
- Larson, Steve 112.19
- Laskar, Jacques 102.08
- Lattanzi, Franca 312.03
- Laughlin, Greg 200.01
- Laughlin, Gregory P. 113.11
- Lauretta, Dante 106.06
- Lavvas, Panayotis 305.09
- Law, Mariah C. 101.04
- Lawrence, Samuel 211.16
- Le Corre, Lucille 205.02, **208.01**
- Le Gall, Alice 302.06
- Le Mouelic, S. 309.05
- Le Mouelic, Stephane 207.01, 302.04, 302.09
- Leblanc, Francois 313.21
- Lebofsky, Larry A. **117.05**
- Lebofsky, Nancy R. 117.05
- Lebonnois, Sébastien 305.06
- Leconte, Jeremy 509.04
- Lederer, Susan M. **413.28**, 413.29
- Lee, Clement G. 101.02
- Lee, Greg 211.15
- Lee, Roger 211.23
- Lee, Seungwon 201.02, 413.05, **505.05**, **505.05**
- Lee, Steven W. **400.01**
- Lee, Yuni **313.19**
- Lefevre, Franck 405.01
- Lega, Elena 510.05, **513.06**, **513.06**, 513.07
- Lehner, Matthew **414.08**
- Lejoly, Cassandra **413.15**, **413.15**
- Lellouch, Emmanuel 202.01, 202.01, 312.14, 508.04, 508.05
- Lemmon, Mark 313.08
- Lemmon, Mark T. **313.07**
- LeMouelic, S. 400.07
- Leonard, Jason 211.29
- Levasseur-Regourd, A. **505.02**
- Levine, S. E. 404.01
- Levison, Harold F. 415.11, **503.05**, 513.05
- Levy, David H. **104.01**
- Lewis, Mark C. 415.08, 415.08, **415.09**, 415.13
- Lewis, Matthew 312.07
- Lewis, Nikole **200.01**, 209.08
- Lewis, Stephen 500.04
- Li, Cheng 207.03, 309.10, **509.09**
- Li, Jian-Yang 208.01, 208.02, **407.02**, 407.06
- Li, Jie 209.02, **209.06**
- Li, Jing 201.05
- Li, Liming 312.11, **312.16**
- Liang, Mao-Chang 207.03, **305.02**
- Licandro, Javier 101.01, 112.10, 205.08, 208.10, 414.04
- Lignell, Antti 418.05
- Likhanskii, Alex 115.06
- Lillis, Robert 313.21
- Lim, Lucy F. **208.10**
- Lim, Tanya 508.05
- Lim, Yeo-Myeong **505.07**
- Linden, Keita 313.16
- Linder, Martin 211.25
- Lindsay, Sean S. **112.04**, 413.28, 413.29
- Line, Michael R. **200.05**, 312.13
- Linscott, Ivan R. 310.06
- Lippi, Manuela 413.18, 502.02
- Lis, Dariusz C. 502.01, 502.03
- Lissauer, Jack 415.01
- Lissauer, Jack J. 206.01, 300.07, **510.01**
- Lisse, C. M. 508.06
- Lisse, Carey M. **407.06**, 413.10, 413.12, 413.24
- Lister, Tim 101.03, **208.27**, **208.27**
- Lister, Timothy 211.06
- Lithwick, Yoram 300.04
- Litvak, Maxim 107.04
- Liu, Chih-Yuan 414.09
- Liu, Junjun **509.01**
- Liu, Qinghui 115.01
- Liu, Yang 400.08
- Livengood, Timothy 405.03
- Livengood, Timothy A. **107.04**, **117.02**
- Lockhart, Matthew 201.04
- Loeffler, Mark **506.02**
- Loeffler, Mark J. 312.05, 507.03
- Lonergan, Kate 206.07
- Loose, Alexander 413.06
- Lopes, Rosaly M. **302.06**, 302.09, 418.01
- Lopez, Eric 113.17, **200.08**
- Lora, Juan M. **309.04**
- Loredo, Thomas J. 105.08
- Lorenz, Ralph D. 302.06, 302.07, 309.08, **309.09**
- Lorenzi, Vania 101.01, **414.04**
- Lovell, Amy J. **413.19**
- Lovis, Christophe 211.25
- Lowry, Stephen **304.04**
- Lowry, Stephen C. 112.15
- Lu, Muzhou 310.01
- Lucas, Andrew 508.06
- Lucas, Antoine 302.06, 405.07
- Lucas, Michael **205.06**
- Lucas, Michael P. 208.31
- Luger, Rodrigo 113.05
- Luhmann, Janet **500.08**
- Luhmann, Janet G. 202.06, 202.06, 313.21
- Lundin, Rickard N. 313.24
- Lunine, Jonathan I. 103.03, 103.03, 211.08, 211.09,

- 309.04, 309.05, 416.03
 Lupovka, Valery 205.01
 Lupu, Roxana 513.03
 Luspay-Kuti, Adrienn 302.03, **309.03**
 Luszczyk-Cook, Statia 312.19, 312.20
 Lykawka, Patryk S. **503.03**
 Lysek, Mark J. 201.08
 Lyytinen, Esko 205.01
 Ma, Yingjuan 313.21, 500.08
 Macke, Robert J. 208.18
 MacKenzie, Shannon **302.04**
 MacLennan, Eric M. **208.19**
 MacQueen, Phillip J. 204.01
 Madeleine, Jean-Baptiste 500.03
 Madhusudhan, Nikku 103.03, 103.03, 105.05, 105.07, 113.08, **200.06**
 Madhusudhanan, Prasanna 210.03
 Madsen, Morton 400.07
 Magee, Brian 418.08
 Magee-Sauer, Karen 413.20
 Magner, Tom 418.07
 Magri, Chris 101.09
 Magri, Christopher 101.04, 201.01, 208.17, 301.01
 Mahaffy, Paul 400.06
 Mahaffy, Paul R. 211.19, 313.02, **313.03**, 405.02
 Mahieux, Arnaud 118.12, 202.07
 Mailhot, E. A. 404.01
 Mainzer, A. K. 508.06
 Mainzer, Amanda K. **201.06**, **201.06**
 Mainzer, Amy K. 101.08, 201.08, 208.20, 208.21, 312.13, 413.11, 413.12
 Maiwald, Frank 211.24
 Makarov, Valeri 102.01
 Malaska, Michael J. 302.06
 Malaska, Mike 211.29
 Malaspina, David 311.01, 311.01
 Malespin, Charles A. 313.02, 405.02
 Maleszewski, Chester **208.14**
 Malhotra, Renu 106.01, **300.05**, 414.01
 Malin, Michael C. 405.01
 Malina, Ondrej 112.03
 Maltagliati, Luca **305.04**
 Manber, Jeffrey 117.02
 Manche, Herve 102.08
 Mandell, Avi **105.07**
 Mandt, K. E. 115.02
 Mandt, Kathleen E. 115.03
 Mandt, Kathy 107.05, 107.05
 Manfroid, Jean 502.08, 505.06, 505.06
 Mangold, N. 400.07
 Mann, Paul 205.02
 Manning, Heidi L. **313.02**
 Manning, Heidi L.K. 405.02
 Mantz, Arlan W. 312.03
 Maquet, Lucie **414.09**
 Marchi, Simone **102.03**, 112.24
 Marchis, Franck 101.03, 112.04, **112.07**
 Margot, Jean-Luc 101.04, 102.02, 112.09, 208.08, **504.02**
 Marley, Mark 105.03, 209.08, 513.03
 Marley, Mark S. 200.02, **206.06**
 Marouf, Essam A. 206.07
 Marshall, Sean **208.17**
 Marshall, Sean E. 101.04
 Marston, Anthony 201.02
 Martin, Marie-Aline 505.06, 505.06
 Martin, Mildred 400.06
 Martin-Torres, Javier 312.13
 Maruyama, Yuki 211.18
 Marzari, Francesco **113.04**, 301.08
 Masaki, Yuka 403.02
 Masci, Frank J. 508.06
 Masiero, Joseph R. 201.06, 201.06, 201.08, **208.20**, 208.21, 413.11, 413.12, 508.06
 Mason, Emily 313.07, **313.08**
 Masset, Frederic 510.05
 Matcheva, Katia **207.04**
 Matousek, Steve 211.24
 Matson, Dennis L. 302.08, **416.03**
 Matsumoto, Koji 112.22, 115.01
 Matsuyama, Isamu 301.04
 Matter, Alexis 205.03
 Matz, Klaus-Dieter 112.24
 Maurice, Sylvestre 400.07
 Maury, A. 404.02
 Mayo, Louis **117.01**
 Mayyasi-Matta, Majd **500.09**
 McAdam, Amy 313.03
 McAdam, Margaret **205.10**
 McArthur, Barbara 113.05
 McCarthy, Donald W. 117.05
 McCauliff, Sean D. 204.06, 209.02, 209.07
 McClanahan, Timothy P. 107.04
 McCleese, Dan 313.13
 McCleese, Dan J. 500.05
 McClintock, William E. 102.06, 114.03, 114.04, 512.03
 McDoniel, William **418.02**
 McDunn, Tamara **313.13**
 McNulty, Tess **202.06**, **202.06**
 McNulty, Tess R. 118.02, 118.02
 McGhee, Colleen 206.07
 McGouldrick, Kevin **118.06**

- McGranaghan, Ryan 211.29
- McGrath, Melissa A. 211.04, 418.08, **501.04**
- McKay, Adam 407.09, **502.07**
- McKay, Adam J. 502.05
- McKay, Christopher P. 405.02
- McKinnon, William B. 418.08, **501.06**, 501.08, 507.02
- McLaughlin, Stephanie A. 211.26
- McMahon, Jay W. **112.17**
- McMillan, Robert S. 208.14
- Meadows, Victoria 103.04, 209.14
- Meadows, Victoria S. 202.04
- Meech, Karen J. **407.03**, 407.06, 413.16, 413.23, 413.31, 502.04, 505.01, 505.04, 508.06
- Meinke, Bonnie K. 210.01
- Melosh, Jay 413.33
- Mendillo, Michael 102.07, 500.09, 512.06, 512.06
- Mennesson, Bertrand 204.02
- Menzel, Raymond L. **201.07**
- Merkel, Aimee **102.06**
- Merkel, Aimee W. 114.03, 114.04
- Merlet, Cecile 312.13
- Merline, William 201.01
- Merline, William J. 101.06, 208.06
- Meslin, P. Y. 400.07
- Meyer, Allan W. **211.10**
- Micela, Giusi 211.25
- Michael, Flasar F. 305.09
- Michaels, Tim I. 404.04
- Michaels, Timothy I. **310.02**
- Michallik, Radoslaw 205.01
- Michaud, Peter 407.03
- Michel, Patrick 106.02, 112.10, 211.20, 301.03
- Micheli, Marco 101.08, 106.03, **208.33**, 401.02
- Midkiff, A. H. 404.01
- Miguel, Yamila **209.11**
- Milam, S. N. 211.08
- Milam, Stefanie N. 211.09, **413.17**, 413.22, 502.01
- Milani, Andrea 106.07, 106.08
- Milani, Giannantonio 407.03
- Milani Comparetti, Andrea 112.14
- Miles, P. F. 115.02
- Miles, Paul 107.05, 107.05
- Miles, Paul F. 107.08, 115.03
- Miller, C. 404.01
- Miller, Jacob **210.08**
- Miller, Kristen 400.06
- Millour, Ehouarn 405.05, 500.03, 509.04
- Mills, Sean 204.02
- Min, Kyoung Wook 505.07
- Mischna, Michael 405.04
- Mischna, Michael A. 500.02
- Misra, Amit **209.14**
- Mita, Makoto 112.22
- Mitchell, Colin 403.05
- Mitchell, Don 512.05
- Mitchell, Donald G. 210.04
- Mitchell, Karl L. 211.29, 302.06
- Mitrofanov, Igor G. 107.04
- Miyamoto, Hirdy 112.22
- Mizuno, Takahide 112.22
- Mizusawa, T. 404.01
- Mocquet, Antoine 113.10
- Modolo, Ronan 313.21
- Moissl, Richard 413.01
- Mokashi, P. S. 115.02
- Molaverdikhani, Karan 118.02, 118.02, 118.13
- Molnar, Lawrence A. 205.04
- Momary, Thomas W. **312.09**, 312.17
- Momary, Tom 312.15
- Mommert, M. 508.04
- Mommert, Michael 304.01, 304.02, 508.05
- Montgomery, Jordan 313.15
- Montmessin, Franck 313.17, 500.07
- Moon, Hong-Kyu 304.08
- Moore, Jeffrey M. **501.09**
- Moore, Luke 500.09, **512.06**, **512.06**
- Moore, Marla H. 507.03
- Morales, N. 404.02
- Morales, Nicolás 101.01, 507.04
- Morales-Juberias, Raul 312.16
- Morbidelli, Alessandro 106.02, 112.10, 503.02, 508.03, 510.04, **510.05**, 513.06, 513.06, 513.07
- Moreno, Raphael 201.02, 202.01, 202.01, 312.14, 502.03
- Morgan, Thomas H. 115.04, 117.04, **211.26**
- Morgenthaler, Jeffrey P. 502.07
- Morishima, Ryuji 206.03, **210.05**
- Morley, Caroline **105.03**
- Morota, Tomokatsu 115.01
- Morris, D. 404.01
- Morris, Richard 405.08
- Morris, Robert L. 209.07
- Morrison, David **111.01**
- Morrison, Sarah J. **313.18**
- Morton, Timothy D. 113.01, 113.02, 113.02
- Moses, Julianne I. **312.13**
- Mosher, Joel A. 406.04
- Moskovitz, Nicholas A. **101.03**, 101.06, 208.10, 208.30, 304.06, 304.06
- Mottola, S. 208.03
- Mottola, Stefano 112.02,

- 304.08, 406.08, 407.03, 505.04
- Moulet, Arielle 112.08, **202.01**, **202.01**, 404.03, 417.01
- Mourão, Décio C. 210.02
- Mousis, Olivier 103.03, 103.03, 415.04, 418.08
- Movshovitz, Naor 417.09
- Mueller, Beatrice 413.14
- Mueller, Beatrice E. 413.24, 413.25
- Mueller, M. 508.04
- Mueller, Michael 205.07, **304.01**, 304.02
- Mueller, Thomas 508.04
- Mueller, Thomas G. 201.02
- Mueller, Tobias 103.06
- Mueller-Wodarg, Ingo 512.06, 512.06
- Muinonen, Karri 205.01, 208.26, 210.16, 413.10
- Muirhead, Philip S. 113.01, 113.02, 113.02, **307.01**
- Mukherjee, J. 115.02
- Mumma, Michael J. 313.04, 313.14, 413.16, 413.18, **413.20**, 413.23, 502.01, 502.02
- Munsat, Tobin 115.05, 311.04
- Mura, Alessandro **312.08**
- Murchie, Scott 405.08
- Murison, M. 404.01
- Murphy, Jim 313.10
- Murphy, Neil 211.24
- Murray, Stephen 211.01, 211.23
- Mustard, John F. **211.17**, **211.17**
- Mutchler, Max 211.07, 413.10
- Mutchler, Max J. 407.02
- Myers, Jonathan 112.20, **112.21**
- Müller, Thomas 508.05
- Müller-Wodarg, Ingo 309.10
- Möstl, Chris 202.06, 202.06
- Nagayama, Takahiro 101.03
- Nagdimunov, Lev 505.03
- Nagy, Andrew F. 512.04
- Naidu, Shantanu **112.09**
- Naidu, Shantanu P. 101.04
- Najita, Joan 208.24
- Najita, Joan R. 415.12
- Nakamura-Messenger, Keiko 413.28
- Namiki, Noriyuki 112.22, 115.01
- Naranjo, O. A. 404.01
- Naranjo, Orlando 310.01
- Nathues, Andreas 208.01
- Navarro-Gonzalez, Rafael 313.02, 405.02
- Navas, Giuliat 310.01
- NcEwen, Alfred 305.03
- Neish, Catherine 107.02, 302.06, **302.07**
- Nelson, R. M. 309.05
- Ness, Richard G. 208.31
- Nesvold, Erika **300.08**, **300.08**
- Nesvorny, David 106.02, 106.06, 402.04, 503.01, **508.03**, 511.03
- Neukum, Gerhard 417.06
- Newman, Claire 309.10
- Newsom, Horton 400.07
- Ngo, Henry **113.01**
- Nichols, Jonathan 512.05
- Nicholson, Philip D. 206.04, 206.05, **206.07**, 206.12, 207.01, 210.06, 302.04, 305.04, 309.05, 309.08, 312.09, 403.04, 406.04, 512.07
- Nieberding, Megan N. 113.13
- Nimmo, Francis 403.05
- Nittler, Larry R. **102.05**
- Nixon, Conor 207.05, 305.09, 312.16
- Nixon, Conor A. 305.08
- Noda, Hirotomo 112.22, 115.01
- Nolan, Michael C. 101.04, 201.01, 208.08, 208.17, 301.01, 401.03
- Noll, Keith 511.06
- Noll, Keith S. 101.06, **304.03**, 507.04
- Norbury, M. 404.02
- Norton, Tim 414.08
- Norwood, J. 211.08
- Norwood, James **312.21**
- Novak, Robert E. **313.04**
- Novaković, Bojan 106.07
- Noyelles, Benoit **102.01**
- Nuding, Danielle **400.04**
- Nuevo, Michel 309.07
- Nugent, Carolyn 201.06, 201.06, **201.08**, 208.20
- Nugent, Carolyn R. 208.21
- Nugent, Carrie R. 508.06
- Ohtsuki, Keiji 406.09, 415.02
- Ojha, Lujendra 413.15, 413.15
- Okuzumi, Satoshi 513.08
- Olkin, Catherine B. 303.01, 303.08, 310.04, 310.04, **404.02**
- Olkin, Jake **310.05**
- Ollila, Ann 400.07
- Ollivier, Marc 211.25
- Olson, Roberta J. M. 108.03
- Opitom, C. 404.02
- Opitom, Cyrielle 413.27
- Ordoñez, Tony 415.13
- Ortiz, J. L. 404.02
- Ortiz, José Luis 101.01, 508.04
- Ortiz, Jose-Luis 508.05
- Ortiz Moreno, Jose L. 507.04
- Orton, Glenn 305.09, 312.16, 312.20
- Orton, Glenn S. **312.07**, 312.13, 312.14, 312.17
- Oshigami, Shoko 112.22, 115.01
- Oswalt, T. 404.01
- Oszkiewicz, Dagmara

- 304.05
 Ovanessian, Aida 305.03
 Owen, Tobias 502.04
 Owen, Tobias C. 405.02
 Owen, Toby 313.02
 O'Brien, David P. 208.01
 Packard, Douglas R. 206.09
 Paczkowski, Brian 418.07
 Padovan, Sebastiano 504.02
 Paetzold, Martin **310.06**
 Paganini, Lucas 413.16, 413.18, 413.20, 413.23, 502.01, **502.02**
 Paige, David A. 107.03, 107.08
 Pal, A. 508.04
 Pal, Andras 508.05
 Palmer, Eric 208.01, **208.02**
 Palotai, Csaba 312.06
 Pan, Margaret 300.08, 300.08
 Pandey, Shubhanga 310.01
 Pappalardo, Robert T. **418.07**
 Paranicas, Chris 210.04, 501.05
 Park, Jang-Hyun 304.08
 Park, Ryan S. 208.04
 Parker, Alex H. **508.01**
 Parker, J. W. 115.02
 Parker, Joel 107.05, 107.05
 Parker, Joel W. 107.08
 Parkinson, Chris **118.05**
 Parkinson, Christopher D. 118.12
 Pasachoff, Jay M. **108.03**, 118.11, **310.01**, 404.01
 Patterson, Geoff 401.03
 Patterson, Wes 418.07
 Patthoff, Alex 211.29
 Paubert, Gabriel 502.03
 Peale, Stanton 504.02
 Peale, Stanton J. **102.02**
 Pearman, George 508.06
 Pearson, Kyle **113.12**, 113.14
 Pearson, Kyle A. 113.13
 Pearson, N. 309.05
 Peixinho, N. 508.04
 Peltoniemi, Jouni 205.01
 Pendleton, Yvonne J. 417.04
 Penteado, Paulo 414.03
 Penteado, Paulo F. **208.23**
 Penttilä, Antti 205.01, 208.26
 Pepin, Robert O. 313.02
 Peplowski, Patrick N. 208.01
 Peralta, Javier 202.08
 Pereira, Mario R. 208.11
 Perez-Becker, Daniel **200.03**
 Pérez-Romero, A. 101.01
 Perez-Tijerina, Eduardo 113.06
 Perna, Davide 205.12
 Perozzi, Ettore 205.12
 Perry, Jason 305.03
 Perryman, Rebecca 305.07, 305.07
 Person, M. J. 404.01
 Person, Michael 208.30
 Person, Michael J. 310.01, 414.07
 Persson, Kristian 211.04
 Persyn, Steve 211.04
 Peter, Kerstin 118.13
 Petit, J. M. 508.08
 Petit, Jean-Marc 414.02, 414.02, 414.10, 415.04, 508.02, 508.09
 Petro, Noah 107.02
 Petrovich, Cristobal 300.05
 Pewett, Tiffany 208.32
 Pickles, A. 404.02
 Pickles, Andrew 211.06
 Pierrehumbert, Raymond 103.04
 Pike, Rosemary E. **508.08**
 Pilorget, Cedric **405.05**
 Pillorz, Stuart H. 210.11
 Pinilla-Alonso, Noemí 101.01, 205.08, 208.15, 414.04, **414.05**, 508.04
 Piquette, Marcus **115.06**
 Pirali, Olivier 505.06, 505.06
 Piskorz, Danielle **113.02**, **113.02**
 Piso, Ana 510.02
 Pitman, Karly M. **406.03**
 Pittichova, Jana **101.06**, 208.09, 304.04
 Plavchan, Peter 113.16, **204.02**
 Pokorny, Petr **402.04**
 Polidan, Ron 211.15
 Polishook, David 101.03, 208.30, **304.06**, **304.06**
 Pond, Jarrad W. **312.06**
 Poppe, Andrew 312.13
 Poppenhaeger, Katja **105.01**
 Porco, Carolyn C. 210.10, **403.05**, 417.06
 Porter, Simon **303.07**
 Postberg, Frank **402.02**, 403.02, 416.04
 Poulet, Francois **112.01**
 Prato, Lisa 204.02
 Pravec, Petr 101.04, 101.06, 208.08, 208.09
 Pray, Don P. 101.04
 Pray, Donald P. 208.08
 Prettyman, Thomas H. 208.01
 Preusker, Frank 112.24
 Prockter, Louise 418.07
 Prodan, Snezana 113.06
 Protopapa, Silvia **303.03**, 407.07, 502.06
 Protopapas, Pavlos 211.23
 Pryor, W. R. 115.02
 Pryor, Wayne 107.05, 107.05
 Pryor, Wayne R. 107.08, **512.05**
 Puig, Ludovic 211.25
 Pursiainen, Samp-

sa **208.25**

Pätzold, Martin 118.03,
118.04, 313.01, 500.04

Quarles, Billy L. **415.01**

Quemerais, Eric 114.01

Quinn, Thomas 113.05

Quintana, Elisa V. 209.02,
209.06

Raaen, Eric 313.02

Rabinowitz, David
L. **511.01**, 511.06, 511.07

Radebaugh, Jani 302.06

Radioti, Katerina 512.05

Rafkin, Scot 404.04

Rages, Kathy **506.04**,
506.05

Rages, Kathy A. 312.18

Raghuram, Susarla 502.08

Ragozzine, Darin 414.03

Raines, Jim 114.02

Rannou, P. 309.05

Rannou, Pascal 305.06

Ranquist, Emily 100.03,
209.03, 209.04

Raphael, Brandon A.
113.13

Raponi, Andrea 413.03

Rasca, Anthony **311.07**

Rathbun, Julie A. **418.01**

Rauer, Heike 513.02

Raugh, Anne C. **117.04**

Rawlins, Joseph 209.03

Ray, Trina 305.03

Raymond, C. A. 208.03

Raymond, Carol 112.02

Raymond, Carol A. 112.24,
208.01, 208.04

Raymond, Sean N. 300.04,
503.02

Rayner, John T. 211.11,
407.06

Reach, William T. 407.06

Reardon, Kevin 502.05

Reardon, Kevin P. 118.11

Reberac, Aurelie 114.01

Rector, Travis 407.03

Reddy, Vishnu **205.02**,

208.01, 208.10, 301.01

Redinger, Haley 413.25

Rehnberg, Morgan **210.01**

Rein, Hanno 300.08, 300.08

Reipurth, Bo 407.03

Remijan, Anthony 502.01

Remijan, Anthony J.
413.17, 413.22

Remus, Stefan 118.04

Renner, Stéfan 210.14

Retherford, Kurt D. 107.05,
107.05, 107.07, **107.08**,
115.02, 115.03, 211.04,
501.02

Reufer, Andreas 503.04

Reyes, Francisco 312.01,
312.01

Reyes-Ruiz, Mauricio
113.06, 414.08, **415.05**

Rhoden, Alyssa R. **504.01**

Ribas, F. B. 404.02

Ribas, Ignasi 211.25

Ricci, Luca 201.04

Rice, J. 400.03

Richardson, Derek C.
106.09, 301.03

Richardson, James
E. **102.04**

Richardson, John
D. **512.02**

Richardson, Mark I. 500.02

Richer, Michael 414.08

Richey, Christina **211.28**

Richter, Matthew J. 509.07

Ries, Paul 211.29, **403.06**

Riesen, Timm E. 313.14,
407.03

Rinaldi, Giovanna **413.04**,
413.07

Rivera-Valentin, Edgard G.
309.03, 400.04

Rivkin, Andrew 201.01,
405.08

Rivkin, Andrew
S. **205.11**, **205.11**

Rivkin, Andy 304.01

Roatsch, Thomas 112.24,
417.06

Roberge, Wayne G. 201.07

Robert, Gaskell 208.02

Robert, Severine 202.07

Robertson, Amy N. 113.13

Robertson, Scott 107.09

Robinson, Tyler 103.04

Robinson, Tyler D. **105.09**,
202.04

Rodriguez, S. 309.05

Rodriguez, Sebastien
207.01, 302.04, 302.09

Roe, Henry 208.30

Roe, Larry 302.03

Roe, Larry A. 309.03

Roediger, Elke 211.01

Rogers, Ford 211.14

Rogers, Leslie **200.07**

Rogosinski, Zeeve 310.01

Rojo, P. 404.01

Rojo, Patricio 310.01

Roman, Anthony **211.07**

Roman, Michael **506.07**

Romani, Paul N. 312.12

Roques, Françoise 414.09

Ros, Katrin **510.03**

Rosing, Wayne 211.06

Rossi, Alessandro
205.12, **301.08**

Rossman, George R. 211.18

Roth, Lorenz 501.02

Roush, Ted 418.05

Rousselot, Philippe
502.08, **505.06**, **505.06**

Rowe, Jason F. 209.02,
209.06, 300.07

Rowland, Scott 400.07

Roy, Mou 305.03

Royer, Emilie M. **406.02**

Rozehnal, Jakub **112.12**

Rozek, Agata 112.15

Rozel, Antoine 403.01

Rozitis, Ben 112.15

Rozitis, Benjamin 304.04

Rubin, Martin 114.02,
505.08

Rugheimer, Sarah

- 103.02, **209.13**
 Ruprecht, J. D. 404.01
 Ruprecht, Jessica D. **414.07**
 Russell, C. T. 208.03
 Russell, Chris 112.02
 Russell, Chris T. 112.24, 202.06, 202.06
 Russell, Christopher T. 208.01
 Russell, Joellen 309.04
 Russell, Ray W. 413.08
 Ryan, Bill 101.03
 Ryan, Eileen 101.03
 Ryan, Erin 511.06
 Ryan, Erin L. **208.09**, 304.03
 Rüschi, Ottaviano 112.24
 Sagan, Thomas A. G. 113.12
 Sagan, Thomas A.G. 113.13
 Sagdeev, Roald Z. 107.04
 Salama, Farid 309.07
 Sallum, S. 404.01
 Salmon, Julien **513.04**
 Samarasinha, Nalin H. **413.14**, 413.15, 413.15, 413.24, 413.25
 Samuelson, Robert 207.02
 Sanchez, Juan 205.02
 Sanchez, Juan A. 301.01
 Sanchez, Paul 301.05
 Sanchez Lana, Diego **301.02**
 Sanchez-Lavega, Agustín **117.03**, 202.08, 202.09, 506.01
 Sandel, Bill R. 512.03
 Sandford, Scott 112.05
 Sandor, Brad J. **202.02**
 Sanford, Brent 113.13
 Sanin, Anton B. 107.04
 Santos-Sanz, Pablo 101.01, 508.04, 508.05
 Sarantos, Menelaos 102.06, 107.06, 114.03, 114.04
 Sasaki, Sho 112.22, **115.01**
 Sasselov, Dimitar 103.02, 209.13
 Saur, Joachim 501.02
 Sayanagi, Kunio 509.02, 509.02
 Sayanagi, Kunio M. 312.10, **509.06**
 Scalice, Daniella 100.01
 Scanlon, Kathleen 500.03
 Schaefer, G. 404.01
 Schaeffer, James 500.06
 Schambeau, Charles A. **413.24**
 Scheeres, Dan 301.08
 Scheeres, Dan J. 211.20
 Scheeres, Daniel 112.17, 208.13
 Scheeres, Daniel J. 101.05, 112.16, 301.01, 301.02, **301.05**, 301.09
 Schenk, Paul 311.06, 406.06, 417.02
 Schenk, Paul M. 501.09
 Schindhelm, Eric 211.04, **303.04**
 Schleicher, Dave G. 407.09
 Schleicher, David G. 407.01, 407.04, **407.05**, 413.15, 413.15
 Schlichting, Hilke **113.03**, **412.01**
 Schlueter, Lindsey 413.25
 Schmedemann, Nico 208.01, 417.06
 Schmider, Francois-Xavier 211.24
 Schmidt, Albrecht 413.01
 Schmidt, Britney E. **501.07**
 Schmidt, Carl **102.07**, 313.15
 Schmidt, Mariek 400.07
 Schmidt, Sarah J. 202.04
 Schmitt, Juergen H. 105.01
 Schmitt, William 117.05
 Schneider, Glenn 118.11
 Schneider, Nicholas M. **211.03**
 Schneider, Nick 117.06, 117.06, 313.17, 313.23, 413.09
 Schneider, Tapio 509.01
 Schofield, John 313.10
 Schofield, John T. 313.13
 Schofield, Tim 500.05
 Schorghofer, Norbert 413.31
 Schroeder, Stefan **112.02**
 Schröder, Susanne 400.07
 Schulte, Rick 118.12
 Schwamb, Megan E. 511.01
 Schwartz, Steve 301.03
 Schwarz, Henriette 105.02
 Schwehm, Gerhard 413.01
 Scipioni, Francesca **417.07**
 Scully, Jennifer 211.29
 Seader, Shawn E. 209.02, 209.06
 Sears, Derek **104.02**
 See, Chuck 305.05
 Sefton-Nash, Elliot 107.08, 305.08
 Segura, Marcia 403.03
 Seidensticker, Klaus J. 413.06
 Seifahrt, Andreas 105.06
 Sekine, Yasuhito **403.02**, 416.04
 Selsis, Franck 312.14
 Senshu, Hiroki **112.22**
 Senske, David 418.07
 Sepersky, Talia 206.07
 Servajean, E. 404.01
 Servajean, Elise 310.01
 Sfair, Rafael 210.02, **310.03**, **310.03**
 Shabaltas, Natalia 512.08
 Shahan, Patrick M. 202.03
 Shankman, Cory **414.02**, **414.02**
 Shapiro Griffin, Kristen L. **211.15**
 Shariff, Karim 415.07
 Shemansky, D. 305.02
 Shepard, Michael K. 101.04, **201.01**

- Sheppard, Scott 101.03
 Sheppard, Scott S. **511.04**, 511.05
 Shia, Run-Lie 207.03, 309.10
 Shibuya, Takazo 403.02
 Shields, Aomawa **103.04**
 Shinn, Adam B. 512.01
 Shipp, Stephanie 100.01, 117.07
 Shizugami, Makoto 112.22
 Shkuratov, Yuriy 413.10
 Showalter, Mark 117.04
 Showalter, Mark R. **206.01**, 206.09, 210.11
 Showman, Adam 200.01
 Showman, Adam P. 200.02, 200.03, **200.04**, 209.10, 312.22, 509.03
 Shu, Anthony **311.04**
 Shupla, Christine 117.07
 Sicardy, B. 404.02
 Sicardy, Bruno 210.14, 305.04
 Siegler, Matthew A. 107.03
 Sierks, Holger 208.01
 Sikto, Michael L. 413.08
 Simon-Miller, Amy 312.16, 506.02
 Simon-Miller, Amy A. 312.05, **506.01**
 Singh, Sandeep **302.03**, 309.03
 Sinukoff, Evan 105.07
 Siskova, Karolina 112.03
 Sitko, Michael 312.20
 Sitko, Michael L. 413.10
 Sitko, Mike L. 407.06
 Sittler, Edward C. 210.04
 Skarda, Jinhie 312.01, 312.01
 Skinner, Ryan 210.10
 Skrutskie, Michael F. 511.07
 Slade, Martin A. 101.02
 Slinger, Tom 118.13
 Sleep, Norman 513.03
 Small, Lindsay C. 113.13
 Smart, Brianna M. 113.13
 Smith, Carter-Thaxton W. 113.13
 Smith, David 211.16
 Smith, David B. **211.22**
 Smith, David E. 107.08
 Smith, Douglas C. 413.28, 413.29
 Smith, H. Todd 512.02
 Smith, Howard 304.02
 Smith, Mark 312.11, 312.16
 Smith, Mary Ann H. 312.03
 Smith, Michael D. 500.05
 Smith, Paul S. 208.14
 Smith, R. 404.02
 Smith, Ramsey 405.03
 Smith, Randall 211.01
 Snellen, Ignas 105.02, 211.25
 Snodgrass, Colin 112.15, **211.21**, 304.04
 Soderblom, Jason M. 207.01
 Soderblom, L. 309.05
 Soderlund, Krista M. **312.24**, **312.24**
 Sokol, Daniel 211.15
 Solenski, P. 404.01
 Solomon, Sean C. 102.02, 102.05
 Solomonidou, Anezina **302.09**
 Sonneborn, G. 211.08
 Sonneborn, George **211.09**
 Sotin, C. 309.05
 Sotin, Christophe **113.10**, 207.01, 302.04, 302.08, 302.09, 305.04, 309.08, 312.09, 403.04
 Soto, Alejandro **500.02**
 Spahr, Timothy 112.21, 208.24
 Sparks, William B. **211.13**
 Spencer, Daniel C. 403.03
 Spencer, John 211.04, 303.08, 406.05, 406.05
 Spencer, John R. **403.03**, 416.01, 417.03, 418.01, 501.02, 501.03
 Sperl, Matthias 413.06
 Spiga, Aymeric 500.04, 506.06, 509.04, 509.07
 Spilker, Linda 210.05
 Spilker, Linda J. **206.03**, 206.04, 210.11
 Spitale, Joseph N. **206.10**
 Spoto, Federica **106.07**
 Springmann, Alessandra 201.01
 Springmann, Alesson-dra **101.04**, 208.08, 208.17, 301.01
 Squyres, S. 400.03
 Srama, Ralf 311.03, 311.04, 311.05, 402.02
 Sremčević, Miodrag 210.01
 Sremcevic, Miodrag 210.03, 210.13, **210.17**
 Sromovsky, Lawrence A. 312.18, **509.08**
 Stam, Daphne 506.07
 Stansberry, J. 211.08, 508.04
 Stansberry, John 211.09, 414.06
 Stansberry, John A. 414.05, **508.05**
 Stapelfeldt, Karl R. **113.16**
 Stark, Christopher C. 204.03
 Starr, Richard D. 102.05
 Statler, Thomas S. 106.09
 Steckloff, Jordan **413.33**
 Steele, Andrew 400.06
 Steffen, Jason H. **300.06**
 Steffes, Paul G. **108.05**, **202.03**
 Steffl, Andrew 211.04
 Steffl, Andrew J. **512.01**
 Steichen, Elise **118.02**, **118.02**
 Stemm, Madison **415.13**
 Stephan, K. 309.05
 Stephan, Katrin **112.24**, 302.09, 416.06, 417.06,

- 417.07
 Stephens, Andrew 511.09
 Stephens, Denise 209.03, 209.04
 Stephens, Denise C. **100.03**
 Stephens, Robert 201.01
 Stephens, Robert D. 112.13
 Stern, Alan 107.05, 107.05, 303.04
 Stern, Jen 313.03
 Stern, Jennifer C. 405.02
 Stern, S. A. 107.08, 115.02, **303.06**, 303.08
 Stern, S. Aan 107.07
 Sternovsky, Zoltan 115.05, **311.01**, **311.01**, 311.03, 311.05
 Stevenson, Kevin B. **105.06**, 209.16
 Stevenson, Rachel 208.20, **413.11**, 508.06
 Stevenson, Rachel A. 208.21, 413.12
 Stewart, G. R. 210.08
 Stewart, Glen R. **415.06**
 Stewart, Ian 313.17, 313.23, 413.09
 Still, Martin D. 204.04, **204.07**
 Stofan, Ellen 302.06
 Stoker, Emily 100.03, 209.03, **209.04**
 Stone, Edward C. **411.01**
 Storey-Fisher, Kate 118.09
 Strobel, Darrell F. 404.05, 501.03
 Strojia, Cierra 413.28, 413.29
 Strom, Robert G. 102.03
 Stubbs, Timothy J. 107.08
 Sturner, Steven J. 210.04, 501.05
 Su, Kate 113.16
 Suetsugu, Ryo **406.09**
 Sugita, Seiji 304.01
 Sunshine, Jessica 407.09, **502.06**
 Sunshine, Jessica M. 205.10, 407.07, 407.08
 Sussman, Michael **509.03**
 Suzuki, Katsuhiko 403.02
 Svedhem, Hakan **202.05**
 Swinyard, Bruce 211.25
 Sykes, Mark V. 208.02
 Sykes, R. Ian 405.04
 Sylvestre, Melody **506.06**, 509.04
 Szalay, Jamey **402.01**
 Szentgyorgyi, Andrew 414.08
 Szopa, Cyril 400.06
 Szulagyi, Judit 510.05
 Tachibana, Shogo 403.02
 Tackley, Paul J. 403.01
 Takahashi, Jun 208.28
 Takahashi, Yu 101.05, 208.13, 301.01
 Takeda, Takaaki 415.02
 Tamayo, Daniel **117.09**, **300.09**
 Tamblyn, Peter 208.06
 Tanga, Paolo 106.09, 118.11, **208.29**
 Tanigawa, Takayuki 510.05, 513.08
 Tanner, Angelle 204.02
 Tardivel, Simon **211.20**
 Tarrh, Andrew 118.03
 Taylor, B. W. 404.01
 Taylor, Matt **413.01**
 Taylor, Patrick 201.01
 Taylor, Patrick A. 101.04, 101.06, **208.08**, 208.17, 301.01
 Tazawa, Seiichi 112.22
 Teanby, Nicholas A. **305.08**
 Teanby, Nick 305.06, 305.09
 Tegler, Stephen 303.03
 Teiser, Jens 405.09, **415.10**, 513.01
 Tejfel, Victor G. **312.04**
 Tellmann, Silvia 118.03, **118.04**, 118.13, 313.01, 500.04
 Tenenbaum, Peter 209.02, 209.06
 Tenishev, Valeriy **114.02**, 313.19, 413.21, 416.02
 Terai, Tsuyoshi **208.28**
 Teske, Johanna 113.14
 Teske, Johanna K. 113.13
 Teyssier, David 201.02
 Thirouin, Audrey **507.04**, 511.06
 Tholen, Dave J. 106.03
 Tholen, David J. **101.08**, 208.33
 Thomas, Cristina 208.30
 Thomas, Cristina A. **205.07**
 Thomas, Peter C. 400.01, **406.07**, 416.05
 Thompson, Robert M. 113.13
 Thorben, Kelling 405.09
 Throop, Henry 107.08
 Tian, Feng **103.01**
 Tilleman, T. 404.01
 Tiller, Christopher 510.08
 Tinetti, Giovanna 211.25
 Tiscareno, M. S. 211.08
 Tiscareno, Matthew S. **206.08**
 Todorov, Kamen 105.05
 Tokar, Robert 400.07
 Tokunaga, Alan 211.12
 Tokunaga, Alan T. **211.11**, 313.14
 Tolbert, Margaret A. 305.01, 400.04
 Tombleson, Ryan 113.13
 Toon, Owen B. 309.02, **500.01**
 Torres, Santiago 415.05
 Tosi, Federico 417.07
 Tosi, Frederico 112.24
 Toth, Imre 407.02
 Towner, Allison P.M. 113.13
 Tozzi, Gian Paolo 413.04, 502.05
 Tozzi, Gian-Paolo **413.07**
 Trafton, Laurence

- M. **303.02**, 418.02, 418.03
 Trainer, Melissa 313.02
 Trainer, Melissa G. 405.02
 Trammell, Harold J. **312.11**
 Traub, Wesley A. **204.05**
 Tremaine, Scott 300.05
 Trieloff, Mario 402.02, 513.02
 Trilling, David 112.19, 112.20, 208.23, 208.30, 304.01, 414.03, 414.05
 Trilling, David E. 205.07, **304.02**
 Trujillo, Chad 511.04, 511.09
 Trujillo, Chadwick A. **511.05**
 Tsang, Constantine 418.01, **501.02**
 Tsuchida, Masayoshi 510.07
 Tsuchiya, Fuminori 211.02
 Tucek, Jiri 112.03
 Tucker, Orenthal **416.02**
 Tucker, Orenthal J. 310.07
 Tucker, Roy **115.04**
 Turner, Jake **113.13**, 113.14
 Turner, Jake D. 113.12
 Turner, Neal 210.05
 Turtle, Elizabeth P. 305.03
 Twicken, Joseph D. 204.06, **209.02**, 209.06, 209.07
 Tyler, Daniel **313.09**
 Tyler, G. Leonard 118.04, 310.06
 Uckert, Kyle 211.29
 Ulusen, Demet 313.16, 500.08
 Upton, Kate 309.07
 Urata, Richard A. **313.06**, 313.11, 500.01
 Urban, Laurie **505.04**
 Uysal, Omer 304.08
 Vachier, Frederic 112.07
 Vaillat, Claire 413.03
 Valdes, Frank 112.19
 Vallat, Claire 413.01
 Vamos, Christopher 510.08
 Van Hoolst, Tim 309.01
 Van Kooten, Samuel J. 205.04
 Van Laerhoven, Christa L. **300.03**
 van Oers, Pieter 304.04
 Vance, Steve 418.07
 Vanco, Radim 304.05
 Vandaele, Ann-Carine 118.12, **202.07**
 Varghese, Philip L. 418.02, 418.03
 Vasavada, Ashwin 312.11, 312.16
 Vasavada, Ashwin R. 107.03
 Vasisht, Gautam 204.02
 Vazan, Allona 415.03
 Vdovichenko, Vladimir D. 312.04
 Venot, Olivia 312.14
 Verbiscer, Anne 311.06, 511.06
 Verbiscer, Anne J. 403.03, 406.03, 417.02, **511.07**
 Veres, Peter **208.22**, 401.02
 Verma, Ashok Kumar **102.08**
 Vermeersen, Bert 504.01
 Vernazza, Pierre **201.04**
 Versteeg, M. H. 115.02
 Versteeg, Maarten 211.04
 Vervack, Ronald J. 102.06, 114.03, 114.04, 208.08, 208.17, 301.01, 407.06, 502.03, 502.07
 Verveer, Arie 101.03
 Vervloet, Michel 505.06, 505.06
 Veverka, Joseph **109.01**, 416.05
 Videen, Gordon 413.10
 Vieira Neto, Ernesto 310.03, 310.03
 Világi, Jozef 101.04
 Vilas, Faith 101.06, **101.07**, 112.13, 208.10, 211.26, 405.08
 Vilenius, Esa 508.04, 508.05
 Villanueva, Geronimo L. 313.04, 313.14, 413.16, 413.17, 413.18, 413.20, 413.22, 413.23, 502.01, 502.02, 502.07
 Villarreal, Jorsely 310.01
 Vinatier, Sandrine 207.05, 305.04, **305.06**, 305.08, 305.09
 Vinnikov, Vladimir 205.01
 Virkki, Anne **208.26**
 Visscher, Channon 105.03
 Vodniza, Alberto Q. 101.04, **208.11**
 Vokrouhlicky, David 106.02, 106.06, 304.06, 304.06, 402.04, 508.03
 Volk, Kathryn **414.01**
 Volquardsen, Eric L. 205.11, 205.11
 von Allmen, Paul A. 201.02, 413.05, 505.05, 505.05
 von Braun, Kaspar 204.02
 Wada, Koji 112.22
 Wagner, Amanda 302.03
 Wagner, Mark R. 208.09
 Wagner, Roland **417.06**
 Wainscoat, Richard 208.22, 401.03, 502.04
 Wainscoat, Richard J. **401.02**
 Waite, Hunter 305.07, 305.07, 406.01
 Waite, J. H. **418.08**
 Walker, Andrew C. 418.03
 Walker, Russel 508.06
 Walker, Russell G. 413.12
 Walker-LaFollette, Amanda M. 113.13
 Wall, Steven D. 302.06
 Wallace, Kent 204.02
 Walp, Bernie 204.02
 Walsh, Kevin 106.06, 503.05
 Walsh, Kevin J. 503.02, **513.05**

- Walther, Brandon 211.04
Wang, Shiang-Yu 414.08
Wang, Xu **107.09**
Wang, Yung-Ching **313.21**
Warner, Brian 201.01
Warner, Brian D. 208.08
Wasserman, L. H. 404.02
Wasserman, Lawrence H. 112.13
Waszczak, Adam 508.06
Watanabe, Naoki 413.26
Watanabe, Yoji 413.26
Watkins, Jessica 508.06
Watson, B. 404.01
Weaver, Harold A. 303.08, 407.02, 407.04, 407.06, 413.27, 502.03
Webber, Matthew W. **209.08**
Weidenschilling, Stuart J. 510.01
Weider, Shoshana Z. 102.05
Weiss, John W. 210.10
Weissman, Paul R. **112.15**, 304.04, 508.06
Wellnitz, Dennis D. 407.07, 407.08
Werner, Michael 211.23
Wessen, Alice 100.01
West, Robert A. 210.06, **305.03**, 312.15, 312.16
Westlake, Joseph H. **305.07**, **305.07**
Weston, Brian 415.07
Whitaker, Allyson 510.08
White, Oliver **406.06**
White, Russel 204.02
Whizin, Akbar **415.08**, **415.08**, 415.09
Widemann, Thomas **118.11**
Wiegert, Paul 413.13
Wiens, Roger 400.07
Wilcox, Patrick 414.06
Wilkins, Ashlee 105.05, 508.06
Williams, Jean-Pierre 107.02, 107.03
Williamson, Hayley **118.01**
Willman, Mark 101.03, 208.30
Wilquet, Valerie 118.12, 202.07
Wilson, Eric H. 312.15
Winter, Othon C. 310.03, 310.03
Winters, Jennifer 208.32
Withers, Paul 118.03, 313.22, 500.09
Wodaski, R. 404.01
Wolf, Eric 500.01
Wolff, Michael J. 400.08, 405.01, 505.03
Wolfgang, Angie **113.17**
Wolk, Scott J. 105.01
Wolters, Stephen D. 112.15, 304.04
Wong, Michael H. **309.10**, 313.02, **405.02**, 506.03
Wood, Stephen **405.06**
Wooden, Diane H. 413.08, 413.28, 413.29, 502.05
Woodney, Laura M. 413.24, **413.25**
Woodson, Adam K. **309.06**
Woodward, Charles E. 208.09, 413.08
Wordsworth, Robin **500.03**, 509.04
Wray, James J. 417.03
Wright, Edward 201.08
Wright, Edward L. 201.06, 201.06, 508.06
Wright, Kevyn 100.03
Wurm, Gerhard 405.09, 510.09, **513.02**
Wyrick, Danielle 418.08
Yakovlev, Grigory 205.01
Yamada, Ryuhei 112.22, 115.01
Yamashita, Naoyuki 208.01
Yanamandra-Fisher, Padma A. **100.02**, 312.07, **312.17**, 407.06
Yang, Bin 407.03, **502.04**
Ye, Quanzhi **413.13**
Yelle, Roger V. 313.18, 512.03
Yen, A. 400.03
Yen, Wei-Ling 414.08
Yeomans, Donald K. **104.03**
Yokoyama, Tadashi 503.01
Yoon, Joh-Na 304.08
Yoshida, Fumi 112.22
Yoshikawa, Ichiro 211.02
Yoshioka, Kazuo **211.02**
Youdin, Andrew **510.02**
Young, Cindy L. **417.03**
Young, Eliot F. 303.01, 404.02
Young, Leslie A. 303.01, 303.08, 310.04, 310.04, 310.07, 404.02, **507.02**
Yseboodt, Marie **309.01**
Yung, Yuk L. 118.05, 118.07, 200.05, **207.03**, 305.02, 309.10
Yves-Chaufray, Jean 313.17
Zacharias, M. 404.02
Zacharias, N. 404.02
Zahnle, Kevin 105.03, **513.03**
Zakharov, Vladimir 201.02
Zalucha, Angela M. **404.04**
Zambon, Francesca 112.24
Zanda, Brigitte 201.04
Zangari, Amanda M. **303.08**, 310.01, 404.01, 414.07
Zboril, Radek 112.03
Zellem, Robert 113.13
Zerpa, Libardo 310.01
Zhakarov, Vladimir 413.02
Zhang, Tielong 118.02, 118.02, 202.06, 202.06
Zhang, X. 305.02
Zhang, Xi 118.07, 207.03, **209.10**, 309.10
Zhang, Zhi-Wei 414.08
Zhang, Zhimeng **206.05**

Zhu, Xun 404.05
Ziffer, Julie 208.15
Zimmerman, Michael
208.13
Zolensky, Michael E.
413.28, 413.29
Zuber, Maria T. 107.08
Zubko, Evgenij 413.10
Zuluaga, Carlos A. 310.01,
404.01

DPS DENVER 2013 NOTES

Handwriting practice lines consisting of 40 horizontal dotted lines.