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.

Current DPS Officers

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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

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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

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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

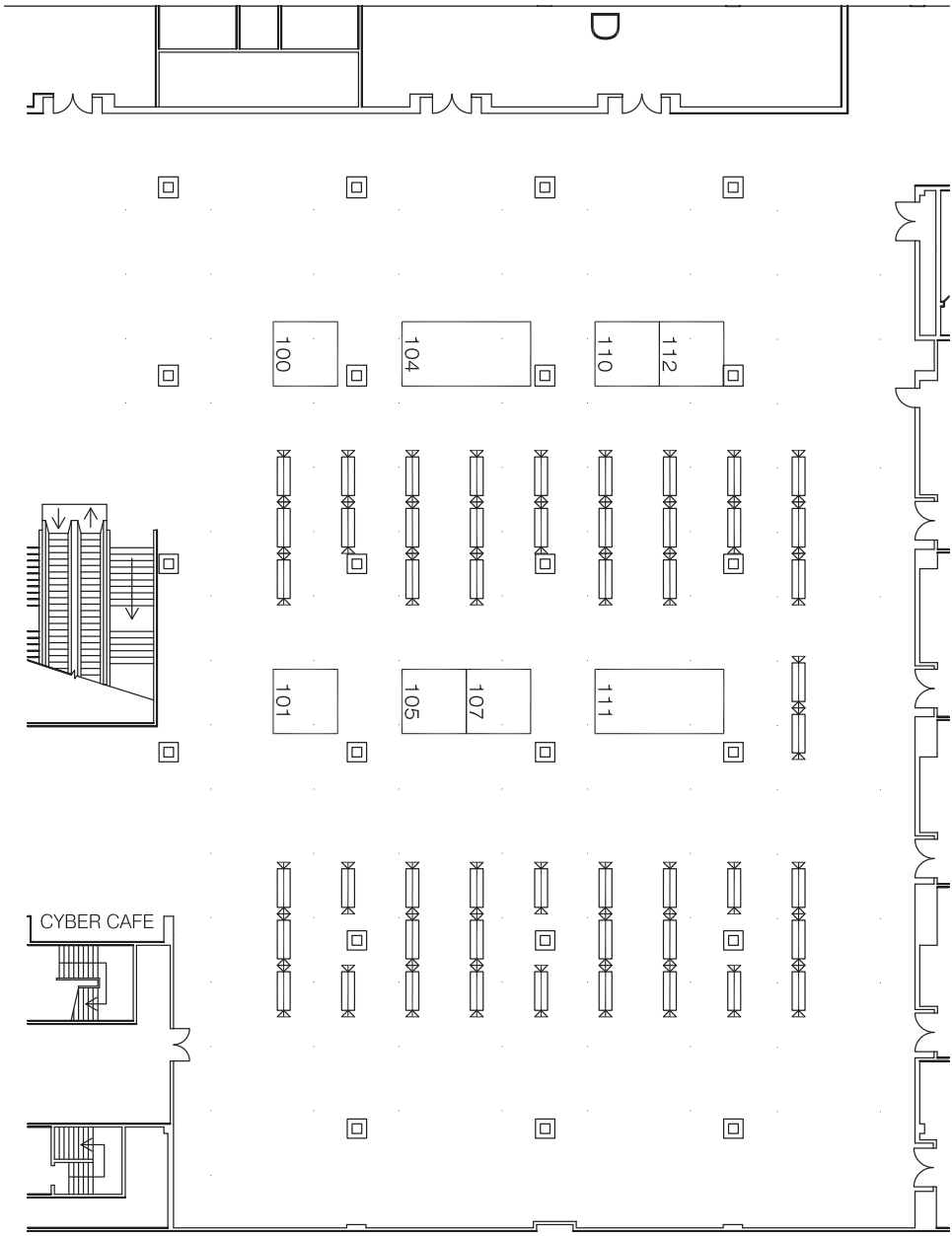
112 NASA Planetary Data system

SHARED BOOK EXHIBITORS

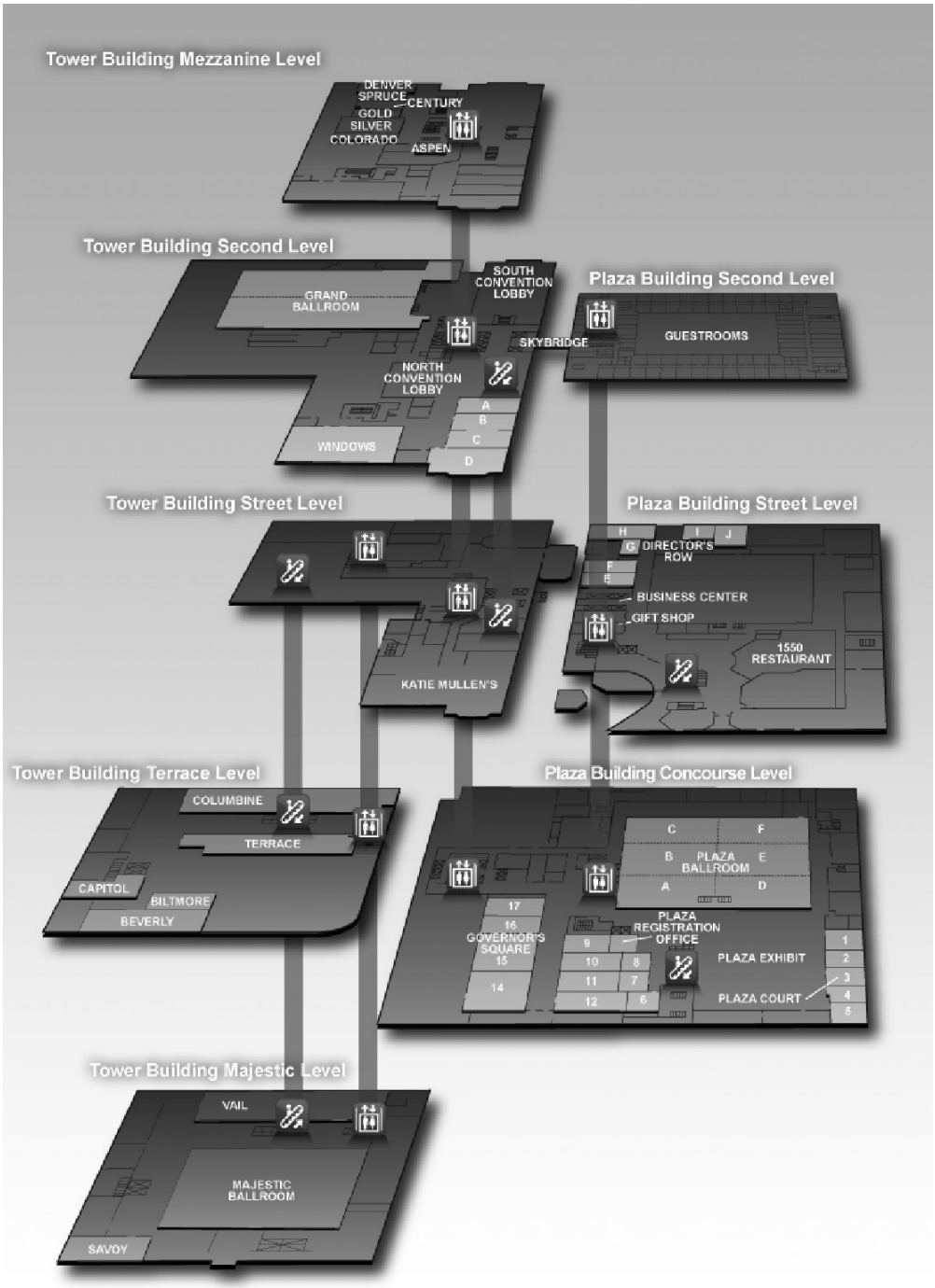
The University of Arizona Press

Princeton University Press

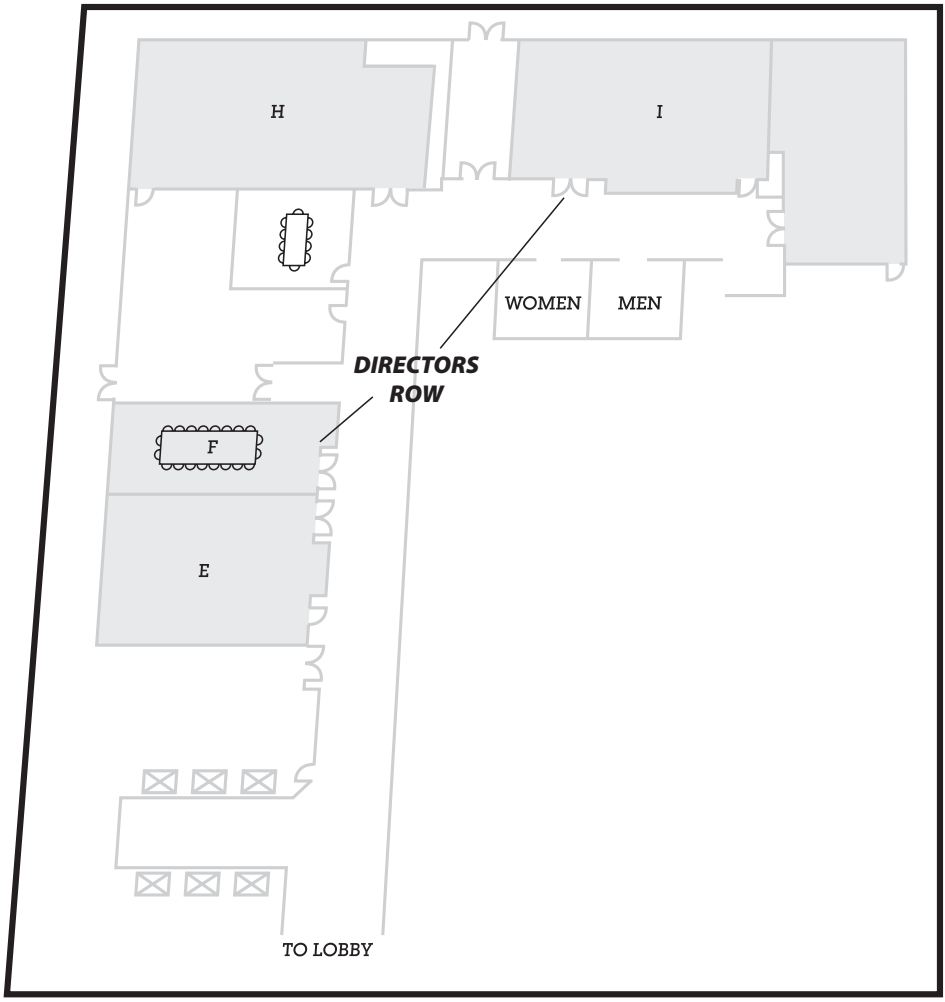
EXHIBIT HALL



SHERATON DOWNTOWN DENVER

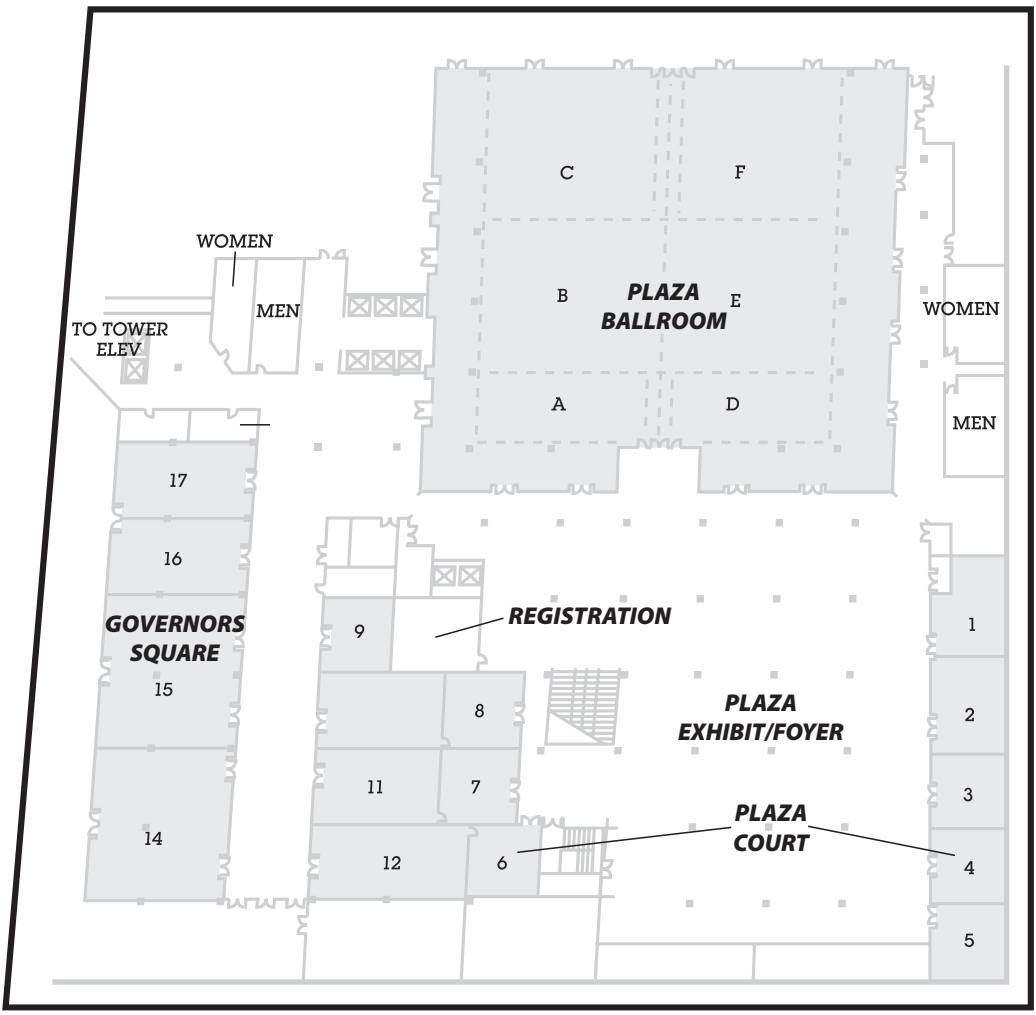


Plaza Building Street Level

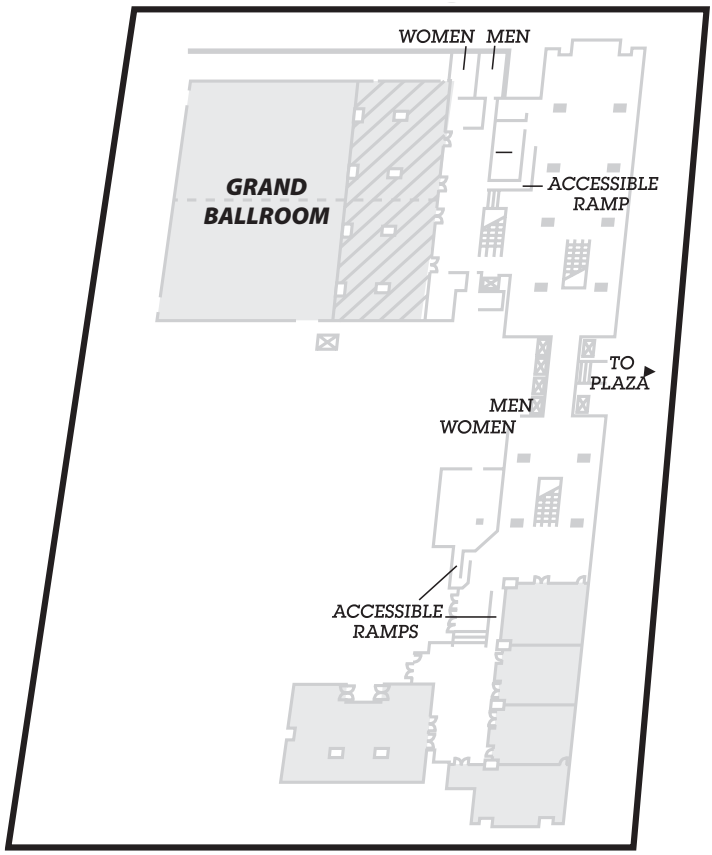


SHERATON DOWNTOWN DENVER

Plaza Building Concourse Level



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
	Workshop: ExoPAG 8, 8:00am-5:00pm, Director's Row H
10:00am	Volunteer Orientation, 10:00am-11:00am, Governor's Square 17
2:00pm	**Workshop**: Planetary Science: Progress with Suborbital Reusable Launch Vehicles (sRLV), 2:00pm-5:00pm, Director's Row I
	Workshop: Remote Observations of Rosetta Target Comet 67P, 2:00pm-5:00pm, Director's Row J
2:30pm	**Workshop**: Negotiation Skills for Planetary Scientists, 2:30pm-4:30pm, Director's Row E
3:00pm	Registration, 3:00pm-8:00pm, Plaza Registration, Concourse Floor of Plaza Building
	Speaker Ready Room, 3:00pm-5:00pm, Plaza Court 2
4:30pm	Student Reception, 4:30pm-6:30pm, Plaza Ballroom D
6:30pm	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) 103 Exoplanets 1: Climate and Habitability (9:00am-10:00am) Plaza A	**101** Asteroids 1: NEOs - Visitors and Targets Plaza E	**102** Mercury Plaza F
	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**		
	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**		

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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		

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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		

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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** Plaza F
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

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** 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."

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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 Buxner[1], Heather Dalton[2], Stephanie Shipp[2], Emily CoBabe-Ammann[3], Daniella Scalice[4], Lora Bleacher[5], Alice Wessen[6]
[1.]Planetary Science Institute, Tucson, AZ, United States. [2.]Lunar and Planetary Institute, Houston, TX, United States. [3.]UCAR Community Programs, Boulder, CO, United States. [4.] NASA Ames Research Center, Moffett Field, CA, United States. [5.]NASA Goddard Space Flight Center, Greenbelt, MD, United States. [6.]Jet 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-Fisher[1]
[1.]Space 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. Stephens[1], Emily Stoker[1], Clement Gaillard[1], Emily Ranquist[1], Pamela Lara[2], Kevyn Wright[3]
[1.]Brigham Young Univ., Provo, UT, United States. [2.]Utah Valley University, Orem, UT, United States. [3.]The 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 DA_{14} During Its Close-Approach to the Earth on February 15th, 2013**
Julia de Leon[1], Noemí Pinilla-Alonso[3], José Luis Ortiz[2], Antonio Cabrera-Lavers[4], Alvaro Alvarez-Candal[5, 2], Nicolás Morales[2], Rene Duffard[2], Pablo Santos-Sanz[2], Javier Licandro[6, 7], A. Pérez-Romero[4], Vania Lorenzi[8], Stefan Cikota[9]
[1.]Universidad de La Laguna, La Laguna, Spain. [2.]Instituto de Astrofísica de Andalucía, Granada, Granada, Spain. [3.]Earth and Planetary Sciences Department, University of Tennessee, Knoxville, TN, United States. [4.]GTC Project, La Laguna, Tenerife, Spain. [5.] Observatório Nacional, Río de Janeiro, Rio de Janeiro, Brazil. [6.]Instituto de Astrofísica de Canarias, La Laguna, Tenerife, Spain.[7.]Departamento de Astrofísica de La Laguna, La Laguna, Tenerife, Spain. [8.]Fundación Galileo Galilei - INAF, Breña Baja, St. Cruz de Tenerife, Spain. [9.]Physics Department, University of Split, Split, Croatia.

101.02 **Goldstone Radar Images of Near-Earth Asteroid 2012 DA14**
Lance A. Benner[1], Marina Brozovic[1], Jon D. Giorgini[1], Joseph S. Jao[1], Clement G. Lee[1], Michael W. Busch[2], Martin A. Slade[1]
[1.]Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States. [2.]National Radio Astronomy Observatory, Socorro, NM, United States.

101.03 The Near-Earth Flyby of Asteroid 2012 DA14

Nicholas Moskovitz[1], Thomas Endicott[2], Tim Lister[3], Bill Ryan[4], Eileen Ryan[4], Mark Willman[5], Carl Hergenrother[6], Richard Binzel[1], David Polishook[1], Francesca DeMeo[1], Susan Benecchi[7], Scott Sheppard[7], Franck Marchis[8], Thomas Angusteijn[9], Peter Birthwhistle[10], Arie Verveer[11], Amanda Gulbis[12], Takahiro Nagayama[13], Alan Gilmore[14], Pam Kilmartin[14]

[1.]MIT, Cambridge, MA, United States. [2.]UMass Boston, Boston, MA, United States. [3.]LCOGT, Santa Barbara, CA, United States. [4.]NM Tech, Socorro, NM, United States. [5.]University of Hawaii, Hilo, HI, United States. [6.]University of Arizona, Tucson, AZ, United States. [7.] Carnegie DTM, Washington, DC, United States. [8.]SETI, Mountain View, CA, United States. [9.] Nordic Optical Telescope, La Palma, Spain. [10.]Great Shefford Observatory, West Berkshire, United Kingdom. [11.]Perth Observatory, Perth, WA, Australia. [12.]SALT, Sutherland, South Africa. [13.]Nagoya University, Nagoya, Japan.[14.]University of Canterbury, Christchurch, New Zealand.

101.04 Binary Near-Earth Asteroid (285263) 1998 QE2: Goldstone and Arecibo Radar Imaging and Lightcurve Observations

Alessondra Springmann[1], Marina Brozović[2], Petr Pravec[3], Patrick A. Taylor[1], Ellen S. Howell[1], Michael C. Nolan[1], Lance A. M. Benner[2], Michael W. Busch[4, 5], Jon D. Giorgini[2], Christopher Magri[6], Jean-Luc Margot[7], Shantanu P. Naidu[7], Michael K. Shepard[8], Sean E. Marshall[9], Mariah C. Law[1, 10], Adrián Galád[3, 11], Jozef Világi[11], Bruce L. Gary[12], Michael D. Hicks[2], Kevin Hills[13], Don P. Pray[14], Alberto Q. Vodniza[15]

[1.]Arecibo Observatory, Arecibo, Puerto Rico, United States. [2.]Jet Propulsion Laboratory, Pasadena, CA, United States. [3.]Academy of Sciences of Czech Republic, Ondrejov, Czech Republic. [4.]SETI Institute, Mountain View, CA, United States. [5.]National Radio Astronomy Observatory, Socorro, NM, United States. [6.]University of Maine at Farmington, Farmington, ME, United States. [7.]University of California Los Angeles, Los Angeles, CA, United States. [8.]Bloomsburg University, Bloomsburg, PA, United States. [9.]Department of Astronomy, Cornell University, Ithaca, NY, United States. [10.]Embry-Riddle Aeronautical University, Daytona Beach, FL, United States. [11.]Modra Observatory, Bratislava, Slovakia. [12.]Hereford Astronomical Observatory, Hereford, AZ, United States. [13.]Riverland Dingo Observatory, Moorook, SA, Australia. [14.]Surgarloaf Mountain Observatory, South Deerfield, MA, United States. [15.]Universidad de Nariño, Nariño, Colombia.

101.05 Goldstone/VLA Radar Observations of Near-Earth Asteroid 4179 Toutatis in 2012

Michael W. Busch[1], Marina Brozovic[2], Lance Benner[2], Jon D. Giorgini[2], Yu Takahashi[2, 3], Daniel J. Scheeres[3]

[1.]SETI/NRAO, Mountain View, CA, United States. [2.]JPL, Pasadena, CA, United States. [3.]U. Colorado Boulder, Boulder, CO, United States.

101.06 Physical Characterization of Deep Impact Flyby Target (163249) 2002 GT

Jana Pittichova[1], Steven R. Chesley[1], Michael D. Hicks[1], Ellen S. Howell[2], William J. Merline[3], Nicholas A. Moskovitz[4], Keith S. Noll[5], Petr Pravec[6], Patrick A. Taylor[2], Faith Vilas[7]

[1.]Jet Propulsion Laboratory, Pasadena, CA, United States. [2.]Arecibo Observatory, Arecibo, Puerto Rico, United States. [3.]Southwest Research Institute, San Antonio, TX, United States. [4.]Massachusetts Institute of Technology, Cambridge, MA, United States. [5.]Goddard Space Flight Center, Greenbelt, MD, United States. [6.]Ondrejov Observatory, Ondrejov, Czech Republic. [7.]Planetary 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 Vilas[1], Amanda Hendrix[1]

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

101.08 **2009 BD as a Candidate for an Asteroid Retrieval Mission**
David J. Tholen[1], Marco Micheli[1], James Bauer[2], Amy Mainzer[2]
[1.]Univ. of Hawaii, Honolulu, HI, United States. [2.]Jet Propulsion Laboratory, Pasadena, CA, United States.

101.09 **Goldstone radar imaging and shape modeling of near-Earth Asteroid (214869) 2007 PA8**
Marina Brozovic[1], Lance Benner[1], Michael Busch[2], Jon Giorgini[1], Chris Magri[3]
[1.]Jet Propulsion Laboratory/Caltech, Pasadena, CA, United States. [2.]NRAO, Soccoro, NM, United States. [3.]University 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 Noyelles[1], Julien Frouard[2], Valeri Makarov[3], Michael Efroimsky[3]
[1.]University of Namur, Namur, Belgium. [2.]UNESP, Rio Claro, SP, Brazil. [3.]US Naval Observatory, Washington, DC, United States.

102.02 **How core-mantle pressure coupling ensures determination of Mercury's interior structure**
Stanton J. Peale[1], Jean-Luc Margot[2], Steven A. Hauck [3], Sean C. Solomon[4]
[1.]UC, Santa Barbara, Santa Barbara, CA, United States. [2.]UC, Los Angeles, Los Angeles, CA, United States. [3.]Case Western University, Cleveland, OH, United States. [4.]Lamont-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. Chapman[2], Caleb I. Fassett[3], James W. Head[4], William F. Bottke[2], Robert G. Strom[5]
[1.]NASA Lunar Science Institute, Boulder, CO, United States. [2.]Southwest Research Institute, Boulder, CO, United States. [3.]Mount Holyoke College, South Hadley, MA, United States. [4.]Brown University, Providence, RI, United States. [5.]University 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. Richardson[1]
[1.]Purdue 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. Nittler[1], Shoshana Z. Weider[1], Richard D. Starr[2], Ellen J. Crapster-Pregont[3], Paul K. Byrne[1], Brett W. Denevi[4], David T. Blewett[4], Sean C. Solomon[3]
[1.]Carnegie Inst. Of Washington, Washington, DC, United States. [2.]Catholic University, Washington, DC, United States. [3.]Columbia University, New York, NY, United States. [4.]The JHU Applied Physics Laboratory, Columbia, MD, United States.

102.06 **Observations of Mercury's Exosphere from MESSENGER: An Overview**
Aimee Merkel[1], William McClintock[1], Ronald Vervack[2], Timothy Cassidy[1], Matthew Burger[3], Rosemary Killen[4], Menelaos Sarantos[5]
[1.]University of Colorado Laboratory for Atmospheric and Space Physics, Boulder, CO, United States. [2.]Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States. [3.]Morgan State University, Baltimore, MD, United States. [4.]NASA Goddard Space Flight Center, Greenbelt, MD, United States. [5.]University of Maryland Baltimore, Baltimore, MD, United States.

102.07 **Sodium Escape in Mercury's Atmosphere: Ground-Based Observations in Support of MESSENGER**
Carl Schmidt[1], Michael Mendillo[2], Jeffrey Baumgardner[2], Robert E. Johnson[1]
[1.]University of Virginia, Charlottesville, VA, United States. [2.]Boston 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 Laskar[4], Herve Manche[4], Mickael Gastineau[4]
[1.]CNES, Toulouse, France. [2.]Observatoire de Besancon, UTINAM-CNRS UMR[6213,]Besancon, France. [3.]Observatoire de la Cote d'Azur, GeoAzur-CNRS UMR[7329] , Valbonne, France. [4.] Astronomie et Syst`emes Dynamiques, IMCCE-CNRS UMR[8028,]Paris, France.

MON

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]
[1.]Tsinghua University, Beijing, China. [2.]NAOC, Beijing, China.
Contributing teams: MUSCLE

103.02 **Comparison of model spectra of the first detected exoplanets in the HZ**
Lisa Kaltenegger[1, 2], Sarah Rugheimer[2], Dimitar Sasselov[2]
[1.]MPIA, Heidelberg, Germany. [2.]CfA, Cambridge, MA, United States.

103.03 **Effects of Exoplanet Planetesimal Carbon Chemistry on Habitability**
Torrence V. Johnson[1], Olivier Mousis[2], Jonathan I. Lunine[3], Nikku Madhusudhan[4]
[1.]Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States. [2.]Institut UTINAM, CNRS/INSU, UMR [6213,]Université de Franche-Comté , Besançon Cedex, France. [3.]Center for Radiophysics and Space Research, Cornell University, Ithaca, NY, United States. [4.]Yale 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. Johnson[1], Olivier Mousis[2], Jonathan I. Lunine[3], Nikku Madhusudhan[4]
[1.]Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States. [2.]Institut UTINAM, CNRS/INSU, UMR [6213,]Université de Franche-Comté , Besançon Cedex, France. [3.]Center for Radiophysics and Space Research, Cornell University, Ithaca, NY, United States. [4.]Yale 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 Bitz[3], Raymond Pierrehumbert[4], Manoj Joshi[5], Tyler Robinson[1, 2]
[1.]Department of Astronomy and Astrobiology Program, University of Washington , Seattle, WA, United States. [2.]NASA Astrobiology Institute, Seattle, WA, United States. [3]Department of Atmospheric Sciences, University of Washington, Seattle, WA, United States. [4.]Department of Geological Sciences, University of Chicago, Chicago, IL, United States. [5.]School 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. Cowan[1], Dorian S. Abbot[2]
[1.]Northwestern University, Evanston, IL, United States. [2.]University of Chicago, Chicago, IL, United States.

103.06 **Habitability and Habitable Zone in Multiple Star Systems**
Nader Haghighipour[1, 2], Tobias Mueller[2]
[1]Univ. of Hawaii, Honolulu, HI, United States. [2]University of Tuebingen, Tuebingen, Germany.

104 Historical Astronomy Division: Invited Talks

Oral Session 08:30 AM to 10:00 AM in Governer's Square 17

Chair: Jay Pasachoff

104.01 **Clyde W. Tombaugh, Discoverer of Pluto: A Personal Retrospective**
David H. Levy[1]
[1]Vail, AZ, United States.

104.02 **Gerard Kuiper and the Infrared Detector**
Derek Sears[1]
[1]Planetary Sciences, NASA Ames research Center/BAERI, Mountain View, CA, United States.

104.03 **Rocks From Space: A Historical Perspective**
Donald K. Yeomans[1]
[1]JPL, 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. Schmitt[2], Scott J. Wolk[1]
[1]Smithsonian Astrophysical Observatory, Cambridge, MA, United States. [2]Hamburg Observatory, Hamburg, Germany.

105.02 **Exploring the atmosphere of HD 189733b at high spectral resolution**
Remco de Kok[1], Jayne Birkby[2], Matteo Brogi[2], Ignas Snellen[2], Simon Albrecht[3], Ernst de Mooij[4], Henriette Schwarz[2]
[1]SRON Netherlands Institute for Space Research, Utrecht , Netherlands. [2]Leiden Observatory, Leiden, Netherlands. [3]MIT, Cambridge, MA, United States. [4]University of Toronto, Toronto, ON, Canada.

105.03 **Clouds in Low-mass, Low-density Planets**
Caroline Morley[1], Jonathan Fortney[1], Mark Marley[2], Eliza Kempton[3], Channon Visscher[4], Kevin Zahnle[2]
[1]University of CA - Santa Cruz, Santa Cruz, CA, United States. [2]NASA Ames, Mountain View, CA, United States. [3]Grinnell College, Grinnell, IA, United States. [4]Southwest Research Institute, Boulder, CO, United States.

105.04 **A Featureless Transmission Spectrum for the Neptune-Mass Exoplanet GJ 436b**
Heather Knutson[1], Björn Benneke[2], Drake Deming[3], Derek Homeier[4]
[1]California Institute of Technology, Pasadena, CA, United States. [2]Massachusetts Institute of Technology, Cambridge, MA, United States. [3]University of Maryland, College Park, MD, United States.[4]Centre de Recherche Astrophysique, Lyon, France.

105.05 **Atmospheric Composition of the ExoNeptune HAT-P-11b**
Jonathan D. Fraine[1], Drake Deming[1], Heather Knutson[2], Ashlee Wilkins[1], Nikku Madhusudhan[3], Kamen Todorov[4]
[1]University of Maryland, College Park, MD, United States. [2]California Institute of Technology, Pasadena, CA, United States. [3]Yale Center for Astronomy & Astrophysics, New Haven, CT, United States. [4]ETH Zürich, Zürich, Switzerland.

105.06 **Ground-Based Transmission Spectroscopy of Moderately-Irradiated Exoplanets**
Kevin B. Stevenson[1], Jacob Bean[1], Andreas Seifahrt[1], Eliza Kempton[2]
[1.]University of Chicago, Chicago, IL, United States. [2.]Grinnell College, Grinnell, IA, United States.

105.07 **Exoplanet Transit Spectroscopy of Hot Jupiters Using HST/WFC3**
Avi Mandell[1], Korey Haynes[2, 1], Evan Sinukoff[3], Nikku Madhusudhan[4], Adam Burrows[5], Drake Deming[6, 1]
[1.]NASA GSFC, Greenbelt, MD, United States. [2.]George Mason University, Fairfax, VA, United States. [3.]University of Hawaii, Honolulu, HI, United States. [4.]Yale University, New Haven, CT, United States.[5.]Princeton University, Princeton, NJ, United States. [6.]University of Maryland, College Park, MD, United States.

105.08 **Statistical Significance of Trends in Exoplanetary Atmospheres**
Joseph Harrington[1], M. Oliver Bowman[1], Sarah D. Blumenthal[1], Thomas J. Loredo[2]
[1.]University of Central Florida, Orlando, FL, United States. [2.]Cornell 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. Robinson[1], David C. Catling[1]
[1.]University 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 JeongAhn[1], Renu Malhotra[1]
[1.]The University of Arizona, Tucson, AZ, United States.

106.02 **A New Population Model of the Orbits and Absolute Magnitudes of Near-Earth Objects**
Mikael Granvik[1], Alessandro Morbidelli[2], Robert Jedicke[3], William F. Bottke[4], Bryce Bolin[3], Edward Beshore[5], David Vokrouhlicky[6], David Nesvorny[4], Patrick Michel[2]
[1.]University of Helsinki, Helsinki, Finland. [2.]Observatoire de la Cote d'Azur, Nice, France. [3.]University of Hawaii, Honolulu, HI, United States. [4.]Southwest Research Institute, Boulder, CO, United States. [5.]University of Arizona, Tucson, AZ, United States. [6.]Charles University, Prague, Czech Republic.

106.03 **High precision predictions for near-Earth asteroids: the strange case of (3908) Nyx**
Davide Farnocchia[1], Steven R. Chesley[1], Dave J. Tholen[2], Marco Micheli[2]
[1.]JPL, Caltech, Pasadena, CA, United States. [2.]IfA, University of Hawaii, Honolulu, HI, United States.

106.04 **A Genetic Cluster of Martian Trojan Asteroids**
Apostolos Christou[1]
[1.]Armagh Obs., Armagh, North Ireland, UK, United Kingdom.

106.05 **A new 6-part collisional model of the Main Asteroid Belt.**
Miroslav Broz[1], Helena Cibulkova[1]
[1.]Charles University in Prague, Prague, Czech Republic.

106.06 **The Unusual Evolution of Billion-Year Old Asteroid Families by the Yarkovsky and YORP Effects**
William Bottke[1], David Vokrouhlicky[2], David Nesvorny[1], Kevin Walsh[1], Marco Delbo[3], Dante Lauretta[4], Harold Connolly[5]
[1.]Southwest Research Inst., Boulder, CO, United States. [2.]Charles U., Prague, Czech Republic. [3.]Nice Obs., Nice, France. [4.]U. Arizona, Tucson, AZ, United States. [5.]Kingsborough 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 Spoto[1], Andrea Milani[1], Alberto Cellino[2], Zoran Knezević[3], Bojan Novaković[3]
[1.]University of Pisa, Department of Mathematics, Pisa, Italy. [2.]INAF–Osservatorio Astronomico di Torino, Pino Torinese, Italy. [3.]Astronomical Observatory, Belgrade , Serbia.

106.08 **Yarkovsky-driven Impact Predictions: Apophis and 1950 DA**
Steven R. Chesley[1], Davide Farnocchia[1], Paul W. Chodas[1], Andrea Milani[2]
[1.]Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States. [2.]Univ. Pisa, Pisa, Italy.

106.09 **Killing the YORP Cycle: A Stochastic and Self-Limiting YORP Effect.**
Desireé Cotto-Figueroa[1, 2], Thomas S. Statler[1, 3], Derek C. Richardson[4], Paolo Tanga[5]
[1.]Ohio University, Athens, OH, United States. [2.]Arizona State University, Tempe, AZ, United States. [3.]National Science Foundation (NSF), Arlington, VA, United States. [4.]University of Maryland, College Park, MD, United States. [5.]Cote 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. Carter[1], Rebecca R. Ghent[2, 3], Joshua L. Bandfield[4]
[1.]NASA Goddard Space Flight Center, Greenbelt, MD, United States. [2.]University of Toronto, Toronto, ON, Canada. [3.]Planetary Science Institute, Tucson, AZ, United States. [4.]Space Science Institute, Boulder, CO, United States.

107.02 **Tsiolkovskiy Crater Thermophysical Anomaly: Massive Impact Melt or Surface Modification?**
Benjamin Greenhagen[1], Catherine Neish[2], J. Pierre Williams[3], Noah Petro[4], Paul Hayne[1], Joshua Bandfield[5]
[1.]Jet Propulsion Laboratory / Califronia Institute of Technology, Pasadena, CA, United States. [2.]Florida Institute of Technology , Melbourne, FL, United States. [3.]University of California, Los Angeles, Los Angeles, CA, United States. [4.]NASA Goddard Spaceflight Center, Greenbelt, MD, United States. [5.]University of Washington, Seattle, WA, United States.

107.03 **Small Scale Cold Traps on Airless Planetary Bodies**
Paul O. Hayne[1], Oded Aharonson[2], Jean-Pierre Williams[3], Matthew A. Siegler[1], Benjamin T. Greenhagen[1], Joshua Bandfield[4], Ashwin R. Vasavada[1], David A. Paige[3]
[1.]Jet Propulsion Laboratory, Pasadena, CA, United States. [2.]Weizmann Institute of Science, Rehovot, Israel. [3.]University of California, Los Angeles, CA, United States. [4.]University of Washington, Seattle, WA, United States.
Contributing teams: Diviner Lunar Radiometer Science Team

107.04 **Measuring the Moon's Morning Dew**
Timothy A. Livengood[1], Gordon Chin[2], Igor G. Mitrofanov[3], William V. Boynton[4], Roald Z. Sagdeev[5], Maxim Litvak[3], Timothy P. McClanahan[2], Anton B. Sanin[3]
[1.]CRESST/UMD/GSFC, Greenbelt, MD, United States. [2.]NASA/GSFC, Greenbelt, MD, United States. [3.]Institute for Space Research, Moscow, Russian Federation. [4.]Lunar and Planetary Laboratory, Tucson, AZ, United States. [5.]University of Md, College Park, MD, United States.

107.05 **LRO LAMP: Regional Variations in FUV Lunar Signatures**
Amanda Hendrix[1], Kurt Retherford[2], Randy Gladstone[2], Dana Hurley[3], Paul Feldman[4], Anthony Egan[5], David Kaufmann[5], Paul Miles[2], Joel Parker[5], Thomas Greathouse[2], Michael Davis[2], Wayne Pryor[6], Mark Bullock[5], Kathy Mandt[2], Alan Stern[5]
[1.]Planetary Science Institute, Tucson, AZ, United States. [2.]Southwest Research Institute, San Antonio, TX, United States. [3.]The Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States. [4.]The Johns Hopkins University , Baltimore, MD, United States. [5.]Southwest Research Institute, Boulder, CO, United States. [6.]Central 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. Killen[1], Menelaos Sarantos[2]
[1.]NASA Goddard Space Flight Center, Greenbelt, MD, United States. [2.]University of Maryland, Baltimore, MD, United States.
Contributing teams: DREAM

107.07 **Lunar Atmospheric H_2 Detections by the LAMP UV Spectrograph on the Lunar Reconnaissance Orbiter**
Jason C. Cook[1], S. Aan Stern[1], Jean-Yves Chaufray[2], Paul D. Feldman[3], G. Randall Gladstone[4], Kurt D. Retherford[4]
[1.]Southwest Research Institute, Boulder, CO, United States. [2.]LATMOS/IPSL, Guyancourt, France. [3.]Johns Hopkins University, Baltimore, MD, United States. [4.]Southwest Research Institute, San Antonio, TX, United States.
Contributing teams: LAMP Sciecne Team

107.08 **LRO-Lyman Alpha Mapping Project (LAMP) Observations of the GRAIL Impact Plumes**
Kurt D. Retherford[1], Thomas K. Greathouse[1], Dana M. Hurley[2], G. R. Gladstone[1], Paul O. Hayne[3], David A. Paige[4], Benjamin T. Greenhagen[3], Elliot Sefton-Nash[4], Maria T. Zuber[5], David E. Smith[5, 11], Anthony Colaprete[6], David E. Kaufmann[7], Paul F. Miles[1], Cesare Grava[1], Henry Throop[7, 8], Paul D. Feldman[9], Amanda R. Hendrix[8], Wayne R. Pryor[10], Timothy J. Stubbs[11], David A. Glenar[12], Joel W. Parker[7], S. A. Stern[7]
[1.]Southwest Research Inst., San Antonio, TX, United States. [2.]JHU/APL, Laurel, MD, United States. [3.]NASA JPL, Pasadena, CA, United States. [4.]UCLA, Los Angeles, CA, United States. [5.]MIT, Boston, MA, United States. [6.]NASA Ames Research Center, Mountain View, CA, United States. [7.]Southwest Research Inst., Boulder, CO, United States. [8.]Planetary Science Inst., Tucson, AZ, United States. [9.]JHU, Baltimore, MD, United States. [10.]Central Arizona College, Coolidge, AZ, United States. [11.]NASA GSFC, Greenbelt, MD, United States. [12.]UMBC, 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]
[1.]LASP, Univ. of Colorado, Boulder, CO, United States. [2.]Colorado 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 Governer's Square 17

Chair: Derek Sears

108.01 **Budgeting for Exploration: the History and Political Economy of Planetary Science**
Jason Callahan[1]
[1.]The Tauri Group, Washington, DC, United States.

108.02 **211-Year-Old Mystery Solved: Creator Of The Word "Asteroid" Revealed**
Clifford J. Cunningham[1]
[1.]National Astronomical Research Institute of Thailand, Fort Lauderdale, FL, United States.

108.03 **The Planetary and Eclipse Oil Paintings of Howard Russell Butler**
Jay M. Pasachoff[1], Roberta J. M. Olson[2]
[1.]Williams College, Williamstown, MA, United States. [2.]New-York Historical Society, New York, NY, United States.

108.04 **dps45**
Donald B. Campbell[1]
[1.]Cornell University, Ithaca, NY, United States.

108.05 **Microwave Remote Sensing Of Planetary Atmospheres: The 50 Years From Mariner 2 To NASA-JUNO**
Paul G. Steffes[1]
[1.]Georgia 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 Veverka[1]
[1.]Cornell 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 Boslough[1]
[1.]Sandia 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 Morrison[1]
[1.]NASA 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 Poulet[1], Yves Langevin[1]
[1.]Institut d'Astrophysique Spatiale, Orsay cedex, France.

112.02 **Resolved Photometry of Vesta Reveals Physical Properties of Crater Regolith**
Stefan Schroeder[1], Stefano Mottola[1], Uwe Keller[2], Carol Raymond[3], Chris Russell[4]
[1.]DLR, Berlin, Germany. [2.]IGEP, Braunschweig, Germany. [3.]JPL, Pasadena, CA, United States. [4.]UCLA, Los Angeles, CA, United States.

112.03 **Space Weathering Evolution on Airless Bodies - Laboratory Simulations with Olivine**
Tomas Kohout[1,2], Jan Cuda[3], Todd Bradley[4], Daniel Britt[4], Jan Filip[3], Jiri Tucek[3], Ondrej Malina[3], Josef Kaslik[3], Karolina Siskova[3], Gunther Kletetschka[2], Radek Zboril[3]
[1.]Department of Physics, University of Helsinki, Helsinki, Finland. [2.]Institute of Geology, Academy of Sciences of the Czech Republic, Prague, Czech Republic. [3.]Regional Centre of Advanced Technologies and Materials, Departments of Physical Chemistry and Experimental Physics, Palacky University Olomouc, Olomouc, Czech Republic. [4.] Department of Physics, University of Central Florida, Orlando, FL, United States.

112.04 **A Spectroscopic and Mineralogical Study of Multiple Asteroid Systems**
Sean S. Lindsay[1], Joshua P. Emery[1], Franck Marchis[2], J. Emilio Enriquez[3,2], Marcelo Assafin[4]
[1.]Earth and Planetary Sciences, University of Tennessee, Knoxville, TN, United States. [2.] Carl Sagan Center, SETI Institute, Mountain View, CA, United States. [3.]Department of Astrophysics, Radboud university Nijmegen, Nijmegen, Netherlands. [4.]Observatorio do Valongo, Universidade Federal do Rio de Janiero, Rio de Janeiro, Brazil.

112.05 **Detailed Laboratory Study of Asteroid Organics**
Kelsey Hargrove[1], Scott Sandford[2], Humberto Campins[1]
[1.]University of Central Florida, Orlando, FL, United States. [2.]NASA AMES Research Center, Moffett Field, CA, United States.

112.06 **New Results on the Surface Gravity of Asteroids and Satellites**
Anthony R. Dobrovolskis[1]
[1.]SETI Institute, Mountain View, CA, United States.

112.07 **New insights on the main-belt triple asteroid (87) Sylvia**
Franck Marchis[1,2], Jerome Berthier[2], Frederic Vachier[2], Josef Durech[3], Pascal Descamps[2], Benoit Carry[2]
[1.]SETI Institute, Mountain View, CA, United States. [2.]IMCCE, Paris, France. [3.]Astronomical Institute, Prague, Czech Republic.

112.08 **Observations of NEA 1998 QE2 with the SMA and VLA**
Bryan J. Butler[1], Mark A. Gurwell[2], Arielle Moullet[3]
[1.]NRAO, Socorro, NM, United States. [2.]CfA, Cambridge, MA, United States. [3.]NRAO, Charlottesville, VA, United States.

112.09 **Coupled Spin and Orbital Dynamics of Binary Near-Earth Asteroids 2000 DP107 and 1991 VH**
Shantanu Naidu[1], Jean-Luc Margot[1]
[1.]UCLA, Los Angeles, CA, United States.

112.10 **The Origin of Asteroid 162173 (1999 JU3)**
Christine Comfort[1], Humberto Campins[1], Julia de Leon[2,3], Alessandro Morbidelli[4], Javier Licandro[2,5], Julie Gayon-Markt[4], Marco Delbo[4], Patrick Michel[4]
[1.]University of Central Florida, Orlando, FL, United States. [2.]University of La Laguna, Tenerife, Spain. [3.]Instituto de Astrofisica de Andalucia, Granada, Spain. [4.]Universite de Nice Sophia Antipolis, Nice, France. [5.]Instituto de Astrofisica de Canarias, La Laguna, Spain.

112.11 **Dynamics and History of Mars Trojans**
Matija Cuk[1], Douglas P. Hamilton[2]
[1.]SETI Institute, Mountain View, CA, United States. [2.]University of Maryland, College Park, MD, United States.

112.12 **Jovian Trojans: Orbital structures versus the WISE data**
Jakub Rozehnal[1,2], Miroslav Broz[1]
[1.]Astronomical Institute, Charles University, V Holesovickach [2.]Prague [8.]Czech Republic. [2.] Stefanik Observatory, Strahovska [205.]Prague [1.]Czech Republic.

112.13 A Troop of Trojans: Photometry of 24 Jovian Trojan Asteroids
Linda M. French[1], Robert D. Stephens[2], Daniel R. Coley[2], Lawrence H. Wasserman[3], Daniel La Rocca[1], Faith Vilas[4]
[1.]Illinois Wesleyan University, Bloomington, IL, United States. [2.]Center for Solar System Studies, Rancho Cucamonga, CA, United States. [3.]Lowell Observatory, Flagstaff, AZ, United States. [4.]Planetary Science Institute, Tucson, AZ, United States.

112.14 Accurate orbit propagation of planet-encountering bodies: the case of (99942) Apophis
Giulio Baù[1], Francesca Guerra[2], Andrea Chessa[2], Linda Dimare[2], Andrea Milani Comparetti[1]
[1.]University of Pisa, Pisa, Italy. [2.]SpaceDyS, Pisa, Italy.

112.15 Shape and Rotation Modeling and Thermophysical Analysis of Near-Earth Asteroid (1917) Cuyo
Paul R. Weissman[1], Stephen C. Lowry[2], Agata Rozek[2], Samuel R. Duddy[2], Ben Rozitis[3], Stephen D. Wolters[1], Colin Snodgrass[4], Alan Fitzsimmons[5], Simon Green[3], Michael D. Hicks[1]
[1.]JPL, Pasadena, CA, United States. [2.]University of Kent, Canterbury, United Kingdom. [3.]The Open University, Milton Keynes, United Kingdom. [4.]Max Planck Institute for Solar System Research, Katlenburg-Lindau, Germany. [5.]Queen's University, Belfast, Belfast, United Kingdom.

112.16 Modeling the tangential YORP effect
Oleksiy Golubov[1, 2], Daniel J. Scheeres[1], Yurij N. Krugly[2]
[1.]University of Colorado, Boulder, CO, United States. [2.]Karazin Kharkiv National University, Kharkiv, Ukraine.

112.17 A Statistical Analysis of YORP Coefficients
Jay W. McMahon[1], Daniel Scheeres[1]
[1.]University of Colorado - Boulder, Boulder, CO, United States.

112.18 Quantifying Observational Selection Effects in Asteroid Surveys
Robert Jedicke[1], Bryce Bolin[1], Mikael Granvik[2], Edward Beshore[3]
[1.]University of Hawaii, Honolulu, HI, United States. [2.]University of Helsinki, Helsinki, Finland. [3.]University of Arizona, Tuscon, AZ, United States.

112.19 A sensitive search for NEOs with the Dark Energy Camera
Lori Allen[1], David Trilling[2], Brian Burt[2], Frank Valdes[1], Ceasr Fuentes[2], David James[1], Steve Larson[3], Eric Christensen[3], Alissa Earle[5], David Herrera[1], Mike Brown[6], Tim Axelrod[4]
[1.]NOAO, Tucson, AZ, United States. [2.]NAU, Flagstaff, AZ, United States. [3.]LPL, Tucson, AZ, United States. [4.]LSST, Tucson, AZ, United States. [5.]Siena College, Loudonville, NY, United States. [6.]Caltech, Pasadena, CA, United States.

112.20 Applications of MOPS to NEO searches
Brian Burt[1], David Trilling[1], Lori Allen[2], Alissa Earle[3], César Fuentes[1], Jonathan Myers[4]
[1.]Northern Arizona University, Flagstaff, AZ, United States. [2.]NOAO, Tuscon, AZ, United States. [3.]Siena College, Loudonville , NY, United States. [4.]University of Arizona, Tuscon, AZ, United States.

112.21 Previously Unidentified Objects Found in MPC 'One Night Stands' File
Jonathan Myers[1], Alon Efrat[1], Timothy Spahr[2]
[1.]University of Arizona, Tucson, AZ, United States. [2.]Smithsonian Astrophysical Observatory, Boston, MA, United States.

112.22 Scientific Goals of Hayabusa-2 LIDAR Experiment
Hiroki Senshu[1], Noriyuki Namiki[1], Takahide Mizuno[2], Naru Hirata[3], Hirotomo Noda[4], Ryuhei Yamada[4], Hitoshi Ikeda[5], Shinsuke Abe[6], Koji Matsumoto[4], Shoko Oshigami[4], Sho Sasaki[7], Hiroshi Araki[4], Seiichi Tazawa[4], Makoto Shizugami[4], Masanori Kobayashi[1], Koji Wada[1], Yoshiaki Ishihara[8], Hirdy Miyamoto[9], Hirohide Demura[3], Jun Kimura[10], Fumi Yoshida[4], Naoyuki Hirata[9], Makoto Mita[2]
[1.]Chiba Institute of Technology, Narashino, Chiba, Japan. [2.]Institute of Space and Astronautical Science, Sagamihara, Kanagawa, Japan. [3.]The University of Aizu, Aizu-Wakamatsu, Fukushima, Japan.[4.]National Astronomical Observatory of Japan, Oshu, Iwate, Japan. [5.]Japan Aerospace Exploration Agency, Tsukuba, Ibaraki, Japan. [6.] Nihon University, Funabashi, Chiba, Japan. [7.]Osaka University, Toyonaka, Osaka, Japan. [8.]National Institute of Advanced Industrial Science and Technology, Tsukuba, Ibaraki, Japan. [9.]The University of Tokyo, Bunkyo-ku, Tokyo, Japan. [10.]Tokyo Institute of Technology, Meguro-ku, Tokyo, Japan.

112.23 Ejecta Behavior and Dynamics within the Proposed ISIS Kinetic Impactor Demonstration Mission
Eugene G. Fahnestock[1], Steven R. Chesley[1]
[1.]Jet 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 Stephan[1], Ralf Jaumann[1, 2], Maria C. De Sanctis[3], Frederico Tosi[3], Eleonora Ammannito[3], Katrin Krohn[1], Francesca Zambon[3], Simone Marchi[4], Ottaviano Rüsch[5], Klaus-Dieter Matz[1], Frank Preusker[1], Thomas Roatsch[1], Carol A. Raymond[6], Chris T. Russell[7]
[1.]DLR, Berlin, Germany. [2.]FU, Berlin, Germany. [3.]INAF, Rome, Italy. [4.]NASA Lunar Sience Institute, Boulder, CO, United States. [5.]Westfälische Univ. Münster, Münster, Germany. [6.] JPL, Pasadena, CA, United States. [7.]UCLA, Pasadena, CA, United States.

112.25 Near Earth Asteroid Characterization: Challenges and Opportunities
Jose Luis Galache[1, 2], Charlotte Beeson[3, 2], Martin Elvis[2]
[1.]Minor Planet Center, Cambridge, MA, United States. [2.]Smithsonian Astrophysical Observatory, Cambridge, MA, United States. [3.]University 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 Ngo[1], Heather A. Knutson[1], Sasha Hinkley[1], Justin R. Crepp[2], Konstantin Batygin[3], Andrew W. Howard[4], John A. Johnson[3], Timothy D. Morton[1], Philip S. Muirhead[5]
[1.]California Institute of Technology, Pasadena, CA, United States. [2.]University of Notre Dame, Notre Dame, IN, United States. [3.]Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, United States. [4.]Institute for Astronomy, University of Hawaii at Manoa, Honolulu, HI, United States. [5.]Institute for Astrophysical Research, Boston University, Boston, MA, United States.

113.02 Cold Friends of Hot Jupiters: NIRSPEC Survey
Danielle Piskorz[1], Heather A. Knutson[1], Philip S. Muirhead[2], Konstantin Batygin[3], Justin R. Crepp[4], Sasha Hinkley[1], Andrew W. Howard[5], John A. Johnson[3], Timothy D. Morton[1]
[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 Piskorz[1], Heather A. Knutson[1], Philip S. Muirhead[2], Konstantin Batygin[3], Justin R. Crepp[4], Sasha Hinkley[1], Andrew W. Howard[5], John A. Johnson[3], Timothy D. Morton[1]
[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 Schlichting[1], Peter Goldreich[2]
[1.]California - Los Angeles, Univesity 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 Marzari[1], 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 Deitrick[1], Rory Barnes[1], Barbara McArthur[2], Thomas Quinn[1], G. Fritz Benedict[2], Adrienne Antonsen[1], Rodrigo Luger[1]
[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. Chavez[1], Nikolaos Georgakarakos[3], Snezana Prodan[4], Francisco Betancourt[2], Mauricio Reyes-Ruiz[5], Hector Aceves[5], Eduardo Perez-Tijerina[2]
[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. Foster[1], Joseph Harrington[1, 2], Ryan A. Hardy[1], Patricio Cubillos[1], Matthew R. Hardin[1]
[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 Madhusudhan[5], Patricio Cubillos[1, 3], Jasmina Blecic[1], Gaspar Á. Bakos[6], Joel D. Hartman[6]
[1.]University of Central Florida, Orlando, FL, United States. [2.]University of Colorado, Boulder, CO, United States. [3.]Max Planck Institute for Astronomy, Heidelberg, Baden-Württemberg, Germany.[4.]Clemson University, Clemson, SC, United States. [5.]Yale University, New Haven, CT, United States. [6.]Princeton University, Princeton, NJ, United States.

113.09 **Dynamical Measurements of the Interior Structure of Exoplanets**
Juliette Becker[1], Konstantin Batygin[2]
[1.]California Institute of Technology, Pasadena, CA, United States. [2.]Harvard-Smithonian 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 Sotin[1], Olivier Grasset[2], Antoine Mocquet[2]
[1.]Jet Propulsion Laboratory / Caltech, Pasadena, CA, United States. [2.]Laboratoire de Planetologie et Geodynamique / Univeristy of Nantes, Nantes, France.

113.11 **A Search for Transits of Radial Velocity Detected Super-Earths**
Joshua A. Kammer[1], Heather A. Knutson[1], Andrew W. Howard[2], Gregory P. Laughlin[3]
[1.]California Institute of Technology, Pasadena, CA, United States. [2.]University of Hawaii, Institute of Astronomy, Manoa, HI, United States. [3.]University of California, Santa Cruz, CA, United States.

113.12 **Constraining the Magnetic Field of HAT-P-16b via Near-UV Photometry**
Kyle Pearson[1], Jake D. Turner[2], Thomas A. G. Sagan[1, 2]
[1.]University of Arizona, Tucson, AZ, United States. [2.]Lunar 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. Pearson[1], Lauren I. Biddle [1], Ian T. Cates[1], Micheal Berube[1], Robert M. Thompson[1], Carter-Thaxton W. Smith[1], Johanna K. Teske[1], Kevin K. Hardegree-Ullman[4], Amy N. Robertson[1], Benjamin E. Crawfod[1], Robert Zellem[1], Megan N. Nieberding[1], Brandon A. Raphael[1], Ryan Tombleson[1], Kendall L. Cook[1], Shelby Hoglund[1], Ryan A. Hofmann[1], Christen Jones[1], Allison P.M. Towner[1], Lindsay C. Small[1], Amanda M. Walker-LaFollette[1], Brent Sanford[1], Caitlin C. Griffith[1], Thomas A.G. Sagan[1]
[1.]University of Arizona, Tucson, AZ, United States. [2.]University of Virginia, Charlottesville, VA, United States. [3.]University of Wisconsin–Madison, Madison, WI, United States. [4.] University of Toledo, Toledo, OH, United States.

113.14 **Testing a Method of Detecting a Magnetic Field of Transiting Hot-Jupiter CoRot-1b**
Lauren Biddle[1], Jake Turner[2], Kyle Pearson[1], Johanna Teske [1]
[1.]The University of Arizona, Tucson, AZ, United States. [2.]The University of Virginia , Charlottesville, VA, United States.

113.16 **Debris Disks around Nearby Late-type Stars: Combined Studies with Herschel and HST**
Karl R. Stapelfeldt[1], Geoffrey Bryden[2], Kate Su[3], John Krist[2], Peter Plavchan[4]
[1.]NASA Goddard Space Flight Center, Greenbelt, MD, United States. [2.]JPL/Caltech, Pasadena, CA, United States. [3.]Univ. of Arizona, Tucson, AZ, United States. [4.]NExScI/ 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 Wolfgang[1], Eric Lopez[1]
[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 Chaufray[1], Eric Quemerais[1], Aurelie Reberac[1]
[1.]*LATMOS, Guyancourt, France.*

114.02 **Kinetic modeling of the sodium distribution in the Hermean surface-bound exosphere**
Valeriy Tenishev[1], Michael R. Combi[1], Xianzhe Jia[1], Martin Rubin[2], Jim Raines[1]
[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. Cassidy[1], Aimee W. Merkel[1], William E. McClintock[1], Matthew H. Burger[2], Rosemary M. Killen[3], Ronald J. Vervack[4], Menelaos Sarantos[5]
[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. Burger[1], Rosemary M. Killen[2], William E. McClintock[3], Aimee W. Merkel[3], Ronald J. Vervack[4], Menelaos Sarantos[5], Timothy A. Cassidy[3]
[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 Sasaki[1], Hiroshi Araki[2], Hideo Hanada[2], Yoshiaki Ishihara[3], Fuyuhiko Kikuchi[2], Yusuke Kono[2], Koji Matsumoto[2], Hirotomo Noda[2], Sander J. Goossens[4], Takahiro Iwata[5], Ryuhei Yamada[2], Noriyuki Namiki[6], Qinghui Liu[7], Hiroo Kunimori[8], Shoko Oshigami[2], Tomokatsu Morota[9]
[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, Sagamihara, 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. Greathouse[1], K. D. Retherford[1], G. R. Gladstone[1], S. A. Stern[2], P. F. Miles[1], A. F. Egan[2], D. E. Kaufmann[2], P. D. Feldman[3], A. R. Hendrix[4], D. M. Hurley[5], W. R. Pryor[6], J. W. Parker[2], M. W. Davis[1], J. C. Cook[2], J. Mukherjee[1], K. E. Mandt[1], M. A. Bullock[2], M. H. Versteeg[1], P. S. Mokashi[1]
[1.]Southwest Research Institute, San Antonio, TX, United States. [2.]Southwest Research Institute, Boulder, CO, United States. [3.]Johns Hopkins University, Baltimore, MD, United States. [4.]Planetary Science Institute, Los Angeles, CA, United States. [5.]Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States. [6.]Central Arizona College, Coolidge, AZ, United States.

115.03 **The Far-UV Albedo of the Moon Determined from Dayside LAMP Observations**
Mark A. Bullock[1], Kurt D. Retherford[2], Randall Gladstone[2], Thomas K. Greathouse[2], Kathleen E. Mandt[2], Amanda R. Hendrix[3], Paul D. Feldman[4], Paul F. Miles[2], Anthony F. Egan[1]
[1.]Southwest Research Institute, Boulder, CO, United States. [2.]Southwest Research Institute, San Antonio, TX, United States. [3.]Planetary Science Institute, Tucson, AZ, United States. [4.]Johns Hopkins University, Baltimore, MD, United States.

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

115.05 **Velocity Scaling of Neutral Gas Generation from Hypervelocity Dust Impact**
Andrew Collette[1], Tobin Munsat[2], Zoltan Sternovsky[1], Mihaly Horanyi[1]
[1.]LASP, University of Colorado, Boulder, CO, United States. [2.]Physics, 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 Likhanskii[4]
[1.]Dept. of Astrophysical and Planetary Science, University of Colorado at Boulder, Boulder, CO, United States. [2.]Dept. of Physics, University of Colorado at Boulder, Boulder, CO, United States.[3.]Laboratory for Atmospheric and Space Physics, Boulder, CO, United States. [4.]Tech-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]
[1.]Lowell Observatory, Flagstaff, AZ, United States. [2.]JHU-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 Mayo[1], Kristen Erickson[2]
[1.]NASA's GSFC, Greenbelt, MD, United States. [2.]NASA 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. Goldstein[1], Stacy Hamel[1], Jeffrey Manber[3], Michael Hulslander[4]
[1.]National Center for Earth and Space Science Education, Columbia, MD, United States. [2.]CRESST/UMD/GSFC, Greenbelt, MD, United States. [3.]Nanoracks, Inc., Alexandria, VA, United States. [4.]National Air and Space Museum, Smithsonian Institution, Washington, DC, United States.

117.03 **Studying the Jovian System with small telescopes**
Agustin Sanchez-Lavega[1], Teresa del Rio Gaztelurrutia[1], Ricardo Hueso[1]
[1.]Universidad 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. Raugh[1], Andy LaMora[2], Kristen Erickson[3], Mitch Gordon[5], Edwin J. Grayzeck[4], Thomas H. Morgan[4], Mark Showalter[5], William Knopf[3]
[1.]University of Maryland , College Park, MD, United States. [2.]TopCoder, Inc., Glastonbury, CT, United States. [3.]NASA Headquarters, Washington, DC, United States. [4.]Goddard Space Flight Center, Greenbelt, MD, United States. [5.]SETI, Mountain View, CA, United States.

117.05 **Scientists and Educators Working Together: Everyone Teaches, Everyone Learns**
Larry A. Lebofsky[1, 4], Nancy R. Lebofsky[1], Donald W. McCarthy[1], Thea L. Canizo[2], William Schmitt[3], Michelle L. Higgins[4]
[1.]University of Arizona, Tucson, AZ, United States. [2.]Planetary Science Insttute, Tucson, AZ, United States. [3.]Science Center of Inquiry, Fountain Hills, AZ, United States. [4.]Girl 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. Klassen[1], Brian Jackson[2], Nick Schneider[3]
[1.]Rowan University, Glassboro, NJ, United States. [2.]Carnegie Institution of Washington, Washington, DC, United States. [3.]University of Colorado, Boulder, CO, United States.

117.06 **DPS Listing of Planetary Science Graduate Programs: A Resource for Students and Advisors**
David R. Klassen[1], Brian Jackson[2], Nick Schneider[3]
[1.]Rowan University, Glassboro, NJ, United States. [2.]Carnegie Institution of Washington, Washington, DC, United States. [3.]University 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 Shupla[3], Emily CoBabe-Ammann[4], Heather Dalton[3], Stephanie Shipp[3]
[1.]University of Arizona, Tucson, AZ, United States. [2.]Planetary Science Institute, Tucson, AZ, United States. [3.]Lunar and Planetary Institute, Houston, TX, United States. [4.]UCAR Community Programs, Boulder, CO, United States.

117.08 **Educational Opportunities for the 2014 Opposition of Mars**
Edward F. Albin[1]
[1.]Fernbank Science Center, Atlanta, GA, United States.

117.09 **Make Movies out of Your Dynamical Simulations with OGRE!**
Daniel Tamayo[1], Robert W. Douglas[2], Heming W. Ge[1], Joseph A. Burns[1]
[1.]Cornell University, Ithaca, NY, United States. [2.]Science 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 Williamson[1], Joseph Grebowsky[2]
[1.]Randolph-Macon College, Ashland, VA, United States. [2.]NASA Goddard Spaceflight Center, Greenbelt, MD, United States.

118.02 **Characteristics of Ionospheric Magnetic Flux Ropes on Venus**
Elise Steichen[1, 2], Tess R. McEnulty[2], Karan Molaverdikhani[2], David Brain[2], Tielong Zhang[3]
[1.]Broomfield High School, Broomfield, CO, United States. [2.]LASP, CU Boulder, Boulder, CO, United States. [3.]SRI, Austrian Academy of Sciences, Graz, Austria.

118.03 **Properties of the V1 layer in the Venus ionosphere using VeRa observations from Venus Express**
Zachary Girazian[1], Paul Withers[1], Kathryn Fallows[1], Andrew Tarrh[1], Martin Pätzold[2], Silvia Tellmann[2], Bernd Häusler[3]
[1.]Boston University, Boston, MA, United States. [2.]University of Cologne, Cologne, Germany. [3.]Bundeswehr University Munich, Munich, Germany.

118.04 **Waves in the Mesosphere of Venus as seen by the Venus Express Radio Science Experiment VeRa**
Silvia Tellmann[1], Bernd Häusler[2], David P. Hinson[4], G. Leonard Tyler[4], Thomas P. Andert[2], Michael K. Bird[1, 3], Takeshi Imamura[5], Martin Pätzold[1], Stefan Remus[6]
[1.]Rheinisches Institut für Umweltforschung, Cologne, Germany. [2.]Institut für Raumfahrttechnik, Universität der Bundeswehr München, Munich, Germany. [3.] Argelander-Institut für Astronomie, University of Bonn, Bonn, Germany. [4.]Department of Electrical Engineering, Stanford University, Stanford, CA, United States. [5.]Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Sagamihara, Japan. [6.]ESAC, ESA, Villa France, Spain.

118.05 **Photochemical Distribution of Venusian Sulfur and Halogen Species**
Chris Parkinson[1], Stephen Bougher[1], Yuk Yung[2], Amanda Brecht[3]
[1.]Univ. of Michigan, Ann Arbor, MI, United States. [2.]California Institute of Technology, Pasadena, CA, United States. [3.]NASA Ames Research Center, Planetary Systems Branch, Moffett Field, CA, United States.

118.06 **Microphysical Model of the Venus clouds between 40km and 80km.**
Kevin McGouldrick[1]
[1.]University of Colorado, Boulder, CO, United States.

118.07 **Bimodal Distribution of Sulfuric Acid Aerosols in the Atmosphere of Venus**
Peter Gao[1], Xi Zhang[1, 2], David Crisp[3], Charles G. Bardeen[4], Yuk L. Yung[1]
[1.]California Institute of Technology, Pasadena, CA, United States. [2.]University of Arizona, Tucson, AZ, United States. [3.]Jet Propulsion Laboratory, Pasadena, CA, United States. [4.] National 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. Baines[1], Mona L. Delitsky[2]
[1.]Space Science & Engineering Center, University of Wisconsin , Madison, WI, United States. [2.]California Specialty Engineering, Pasadena, CA, United States.

118.09 **Laboratory Studies of O_2 Excited States Relevant to the CO_2 Planets**
Konstantinos S. Kalogerakis[1], Oleg Kostko[1], Kate Storey-Fisher[1]
[1.]SRI 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]
[1.]University of Colorado, Boulder, CO, United States. [2.]LASP, Boulder, CO, United States.

118.11 **Characterization of a transiting exo-Venus : lessons from the 2012 Transit**
Thomas Widemann[1], Sarah A. Jaeggli[2], Kevin P. Reardon[3], Paolo Tanga[4], Jay M. Pasachoff[5], Glenn Schneider[6]
[1.]Obs. Paris, Meudon, France. [2.]Montana State University, Bozeman, MT, United States. [3.] NSO/Sacramento Peak, Tucson, AZ, United States. [4.]Obs. Côte d'Azur, Nice, France. [5.] Williams College, Williamstown, MA, United States. [6.]Steward Obs., Tucson, AZ, United States.

118.12 **Venus Terminator Temperature Structure: Venus Express SOIR and VTGCM Comparisons**

Stephen W. Bougher[1], Christopher D. Parkinson[1], Rick Schulte[4], Amanda S. Brecht[2], Johanna-Laina Fischer[5], Ann-Carine Vandaele[3], Valerie Wilquet[3], Arnaud Mahieux[3]
[1.]Univ. of Michigan, Ann Arbor, MI, United States. [2.]NASA Ames, Moffett Field, CA, United States. [3.]BIRA, Brussels, Belgium. [4.]Santa Clara University, Santa Clara, CA, United States. [5.]University of Pennsylvania, Philadelphia, PA, United States.

118.13 **Venus' 5577 Å Oxygen Green Line: An Auroral Process?**

Candace L. Gray[1], Nancy Chanover[1], Tom Slanger[2], Karan Molaverdikhani[3], Bernd Häusler[4], Silvia Tellmann[5], Kerstin Peter[6]
[1.]New Mexico State University, Las Cruces, NM, United States. [2.]SRI International, Menlo Park, CA, United States. [3.]The Laboratory for Atmospheric and Space Physics, Boulder, CO, United States.[4.]Institut für Raumfahrttechnik, Universität der Bundeswehr , München, Germany. [5.]Rheinisches Institut fur Umweltforschung, Universitat zu Koln, Cologne, Germany. [6.]Universität 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 Lewis[1], Heather Knutson[2], Julien de Wit[1], Eric Agol[6], Adam Burrows[9], David Charbonneau[3], Nicolas Cowan[7], Drake Deming[8], Jonathan Fortney[4], Jonathan Langton[10], Greg Laughlin[4], Adam Showman[5], Tiffany Kataria[5]
[1.]MIT, Cambridge, MA, United States. [2.]Caltech, Pasadena, CA, United States. [3.]Harvard University, Cambridge, MA, United States. [4.]UCSC, Santa Cruz, CA, United States. [5.] University of Arizona, Tucson, AZ, United States. [6.]University of Washington, Seattle, WA, United States. [7.]Northwestern University, Evanston, IL, United States. [8.]University of Maryland, College Park, MD, United States.[9.]Princeton University, Princeton, NJ, United States. [10.]Principia College, Elsah, IL, United States.

200.02 **Updating the SPARC/MITgcm to model the atmospheric circulation of super Earths and terrestrial exoplanets**
Tiffany Kataria[1], Adam P. Showman[1], Robert M. Haberle[2], Mark S. Marley[2], Jonathan J. Fortney[3], Richard S. Freedman[4, 2]
[1.]University of Arizona, Tucson, AZ, United States. [2.]NASA Ames Research Center, Mountain View, CA, United States. [3.]UCSC, Santa Cruz, CA, United States. [4.]SETI Institute, Mountain View, CA, United States.

200.03 **Atmospheric Heat Redistribution on Hot Jupiters**
Daniel Perez-Becker[1], Adam P. Showman[2]
[1.]University of California, Berkeley, Berkeley, CA, United States. [2.]University of Arizona, Tucson, AZ, United States.

200.04 **Atmospheric Dynamics of Brown Dwarfs and Directly Imaged Giant Planets**
Adam P. Showman[1], Yohai Kaspi[2]
[1.]University of Arizona, Tucson, AZ, United States. [2.]Weizmann Institute of Science, Rehovot, Israel.

200.05 **A Novel Diagnosis of Chemical Disequilibrium in Extrasolar Planet and Substellar Object Atmospheres**
Michael R. Line[1], Yuk L. Yung[1]
[1.]California Institute of Technology, Pasadena, CA, United States.

200.06 **Constraints on Elemental Abundances in Hot Jupiter Atmospheres and Implications for Their Formation Conditions**
Nikku Madhusudhan[1]
[1.]Yale University, New Haven, CT, United States.

200.07 **Characterizing the Demographics of Exoplanet Bulk Compositions**
Leslie Rogers[1]
[1.]California Institute of Technology, Pasadena, CA, United States.

200.08 **How Thermal Evolution and Photo-Evaporation Sculpt Kepler's Sub-Neptunes and Super-Earths.**
Eric Lopez[1], Jonathan J. Fortney[1]
[1.]Department of Astronomy & Astrophysics, UC Santa Cruz, Santa Cruz, CA, United States.

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. Shepard[1], Patrick Taylor[2], Michael Nolan[2], Ellen Howell[2], Alessandra Springmann[2], Jon Giorgini[3], Lance Benner[3], Brian Warner[4], Alan Harris[4], Robert Stephens[4], William Merline[5], Andrew Rivkin[6], Dan Coley[7], Beth Clark[8], Maureen Bell[8], Christopher Magri[9]
[1.]Bloomsburg Univ., Bloomsburg, PA, United States. [2.]Arecibo Observatory, Arecibo, Puerto Rico, United States. [3.]Jet Propulsion Laboratory, Pasadena, CA, United States. [4.] More Data!, Rancho Cucamonga, CA, United States. [5.]Southwest Research Inst., Boulder, CO, United States. [6.]JHU- Applied Physics Lab, Laurel, MD, United States. [7.]Center for Solar System Studies, Rancho Cucamonga, CA, United States. [8.]Ithaca College, Ithaca, NY, United States. [9.]University of Maine Farmington, Farmington, ME, United States.

201.02 The Water Regime of Dwarf Planet (1) Ceres
Michael Kueppers[1], Laurence O'Rourke[1], Dominique Bockelee-Morvan[2], Vladimir Zakharov[2], Seungwon Lee[3], Paul A. von Allmen[3], Benoit Carry[1, 4], David Teyssier[1], Anthony Marston[1], Thomas G. Mueller[5], Jacques Crovisier[2], Antonella Barucci[2], Raphael Moreno[2]
[1.]ESA/ESAC, Villanueva de la Canada, Madrid, Spain. [2.]Paris Observatory, Meudon, France. [3.]Jet Propulsion Laboratory, Pasadena, CA, United States. [4.]Paris Observatory, Paris, France. [5.]MPE, Garching, Germany.

201.03 Thermal and Structural Evolution of Asteroid (4) Vesta
Bjorn Davidsson[1]
[1.]Dept. of Physics and Astronomy, Uppsala, Sweden.

201.04 Constraints on planetesimal formation from asteroid compositions
Pierre Vernazza[1], Brigitte Zanda[2], Richard Binzel[3], Takahiro Hiroi[4], Francesca DeMeo[3], Mirel Birlan[5], Roger Hewins[2, 6], Luca Ricci[7], Pierre Barge[1], Matthew Lockhart[3]
[1.]Laboratoire d'Astrophysique de Marseille, Marseille, France. [2.]Muséum National d'Histoire Naturelle, Paris, France. [3.]Massachusetts Institute of Technology, Cambridge, MA, United States. [4.]Brown University, Providence, RI, United States. [5.]Observatoire de Paris, Paris, France. [6.]Rutgers University, Piscataway , NJ, United States. [7.]California Institute of Technology, Pasadena, CA, United States.

201.05 Discovery of the Dust Tail of Asteroid (3200) Phaethon
David Jewitt[1], Jing Li[1], Jessica Agarwal[2]
[1.]UCLA, Los Angeles, CA, United States. [2.]Max Planck Institute, Lindau, Germany.

201.06 NEOWISE: Recent Results and Observations of Tiny Near-Earth Objects
Amanda K. Mainzer[1], James Bauer[1], Tommy Grav[2], Joseph Masiero[1], Carolyn Nugent[1], Roc Cutri[3], Edward L. Wright[4]
[1.]JPL, Pasadena, CA, United States. [2.]Planetary Science Institute, Tucson, AZ, United States. [3.]IPAC/Caltech, Pasadena, CA, United States. [4.]UCLA, 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]
[1.]Rensselaer Polytechnic Institute, Troy, NY, United States. [2.]New 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 Nugent[1], Amy Mainzer[1], Mark J. Lysek[1], Joseph Masiero[1], Tommy Grav[2], James Bauer[1], Roc M. Cutri[3], Edward Wright[4]
[1.]Jet Propulsion Laboratory, Pasadena, CA, United States. [2.]Planetary Science Institute, Tucson, AZ, United States. [3.]Infrared Processing and Analysis Center, California Institute of Technology, Pasadena, CA, United States. [4.]UCLA, 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 Moullet[1], Raphaël Moreno[2], Thérèse Encrenaz[2], Emmanuel Lellouch[2], Thierry Fouchet[2]
[1.]NRAO, Charlottesville, VA, United States. [2.]LESIA/ Observatoire de Paris, Meudon, France.

202.02 **First Measurements of ClO in the Venus Mesosphere**
Brad J. Sandor[1], R Todd Clancy[1]
[1.]Space 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. Steffes[1], Patrick M. Shahan[1]
[1.]Georgia Inst. of Tech., Atlanta, GA, United States.

202.04 **Spatially-Resolved Measurements of H_2O, HCl, CO, OCS, SO_2, and cloud opacity in the Venus Near-Infrared Windows**
Giada Arney[1, 2], Victoria S. Meadows[1, 2], David Crisp[3], Sarah J. Schmidt[4], Jeremy Bailey[5], Tyler D. Robinson[1, 2]
[1.]University of Washington, Seattle, WA, United States. [2.]Virtual Planetary Laboratory, Seattle, WA, United States. [3.]Jet Propulsion Laboratory, Pasadena, CA, United States. [4.] Ohio State University, Columbus, OH, United States. [5.]The University of New South Wales, Sydney, NSW, Australia.

202.05 **Experimental Aerobraking with Venus Express**
Hakan Svedhem[1]
[1.]ESA/ESTEC, Noordwijk, Netherlands.

202.06 **Oxygen Escape from Venus During High Dynamic Pressure ICMEs**
Tess McEnulty[1], Janet G. Luhmann[2], David A. Brain[1], Andrei Fedorov[3], Lan K. Jian[4, 5], Chris T. Russell[6], Tielong Zhang[7], Chris Möstl [2], Yoshifumi Futaana[8], Imke de Pater[9]
[1.]LASP, CU Boulder, Boulder, CO, United States. [2.]SSL, UC Berkeley, Berkeley, CA, United States. [3.]IRAP, Toulouse, Toulouse, France. [4.]Astronomy Department, UMD, College Park, MD, United States.[5.]NASA GSFC, Greenbelt, MD, United States. [6.]IGPP, UCLA, Los Angeles, CA, United States. [7.]SRI, AAS, Graz, Austria. [8.]IRF, Kiruna, Kiruna, Sweden. [9.]EPS Department, UC Berkeley, Berkeley, CA, United States.

202.07 **High Variability of the Venus Mesosphere and Lower Thermosphere**
Ann C. Vandaele[1], Rachel Drummond[1], Arnaud Mahieux[1], Severine Robert[1], Valerie Wilquet[1]
[1.]Belgian Inst. for Space Aeronomy, Brussels, Belgium.

202.08 **Venus Winds From Ultraviolet, Visible and Near Infrared Images From the VIRTIS Instrument on Venus Express**
Ricardo Hueso[1, 2], Itziar Garate-Lopez[1], Javier Peralta[3], Tatyana Bandos[1], Agustín Sánchez-Lavega[1, 2]
[1.]Universidad del País Vasco, Bilbao, Spain. [2.]Unidad Asociada Grupo Ciencias Planetarias UPV/EHU-IAA(CSIC), Bilbao, Spain. [3.]Instituto de Astrofísica de Andalucía, (CSIC), Granada, Spain.

202.09 **Temperature retrieval at the southern pole of the Venusian atmosphere**
Itziar Garate-Lopez[1], Antonio Garcia-Munoz[2], Ricardo Hueso[1], Agustin Sanchez-Lavega[1]
[1.]Fisica Aplicada I, Euskal Herriko Unibertsitatea / Universidad del Pais Vasco, Bilbao, Spain. [2.]ESA 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. Cochran[1], Michael Endl[1], Erik J. Brugamyer[1], Phillip J. MacQueen[1]
[1.]Univ. of Texas at Austin, Austin, TX, United States.

204.02 **Precision Near-Infrared Radial Velocities**
Peter Plavchan[1], Guillem Anglada-Escude[2], Russel White[3], Peter Gao[1], Cassy Davison[3], Sean Mills[4], Chas Beichman[1], Carolyn Brinkworth[1], John A. Johnson[5], Michael Bottom[1], David Ciardi[1], Kent Wallace[1], Bertrand Mennesson[1], Kaspar von Braun[6], Gautam Vasisht[1], Lisa Prato[7], Stephen Kane[8], Angelle Tanner[9], Bernie Walp[10], Sam Crawford[1]
[1.]Caltech, Pasadena, CA, United States. [2.]University of Goettingen, Goettingen, Germany. [3.]Georgia State University, Atlanta, GA, United States. [4.]University of Chicago, Chicago, IL, United States.[5.]Harvard University, Cambridge, MA, United States. [6.]Max Planck Institute for Astronomy, Heidelberg, Germany. [7.]Lowell Observatory, Flagstaff, AZ, United States. [8.]San Francisco State University, San Francisco, CA, United States. [9.] Mississippi State University, Mississippi State, MS, United States. [10.]Gemini Observatory, Hilo, HI, United States.

204.03 **A Survey for Very Short-Period Planets in the Kepler Data**
Brian K. Jackson[1], Christopher C. Stark[1], Elisabeth R. Adams[2], Michael Endl[3], Phil Arras[4], Alan Boss[1], Drake Deming[5]
[1.]Carnegie DTM, Washington, DC, United States. [2.]Planetary Science Institute, Tucson, AZ, United States. [3.]McDonald Observatory, The University of Texas at Austin, Austin, TX, United States.[4.]Department of Astronomy, University of Virginia, Charlottesville, VA, United States. [5.]Department 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. Borucki[1], Stephen T. Bryson[1], Michael R. Haas[1], Jon M. Jenkins[2], Martin D. Still[3]
[1.]NASA Ames Research Center, Moffett Field, CA, United States. [2.]SETI Institute, Mountain View, CA, United States. [3.]Baeri, Sonoma, CA, United States.

204.05 **An Analysis and Implications of Kepler's Photometric Uncertainties**
Wesley A. Traub[1]
[1.]Jet Propulsion Laboratory, Pasadena, CA, United States.

204.06 **Likely Planet Candidates Identified by Machine Learning Applied to Four Years of Kepler Data**
Jon M. Jenkins[1], Sean D. McCauliff[2], Joseph H. Catanzarite[1], Joseph D. Twicken[1], Todd C. Klaus[2]
[1.]SETI Institute, Moffett Field, CA, United States. [2.]Orbital 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[1]
[1.]BAERI/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 Grokhovsky[6], Grigory Yakovlev[6], Esko Lyytinen[3], Vladimir Vinnikov[2], Jakub Haloda[7], Patricie Halodova[7], Radoslaw Michallik[8], Antti Penttilä[4], Karri Muinonen[1, 4], Jouni Peltoniemi[1], Valery Lupovka[9], Vasily Dmitriev[9]
[1.]Finnish Geodetic Institute, Masala, Finland. [2.]Dorodnitsyn Computing Center, Russian Academy of Science, Moscow, Russian Federation. [3.]Finnish Fireball Working Group, Helsinki, Finland.[4.]Department of Physics, University of Helsinki, Helsinki, Finland. [5.]Institute of Geology, Academy of Sciences of the Czech Republic, Prague, Czech Republic. [6.]Ural Federal University, Ekaterinburg, Russian Federation. [7.]Czech Geological Survey, Prague, Czech Republic. [8.]Department of Geosciences and Geography, University of Helsinki, Helsinki, Finland. [9.]State University of Geodesy and Cartography, Moscow, Russian Federation.

205.02 **Composition of Chelyabinsk Meteorite: Identifying its Parent Body in the Main Belt**
Vishnu Reddy[1], Ed Cloutis[2], Matthew Cuddy[2], William Bottke[3], Juan Sanchez[4], Paul Mann[2], Matthew Izawa[2], Gary Fujihara[5], Michael Gaffey[6], Lucille Le Corre[1]
[1.]Planetary Science Institute, Tucson, AZ, United States. [2.]University of Winnipeg, Winnipeg, MB, Canada. [3.]Southwest Research Institute, Boulder, CO, United States. [4.]Max Planck Instiute for Solar System Research, Katlenburg-Lindau, Lower Saxony, Germany. [5.]Big Kahuna Meteorites, Hilo, HI, United States. [6.]University 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 Delbo[1], Alexis Matter[2], Bastian Gundlach[3], Juergen Blum[4]
[1.]Laboratoire Lagrange, CNRS-Observatoire de la Cote d'Azur, Nice, France. [2.]Institut de planetologie et d'astrophysique de Grenoble, Grenoble, France. [3.]Institut fuer Geophysik und extraterrestrische Physik, Technische Universitaet Braunschweig, Braunschweig, Germany. [4.]IMCCE, Observatoire de Paris, UPMC, CNRS, Paris, France.

205.04 **Reflectance Properties and Age of the Baptistina Family**
Melissa J. Dykhuis[1], Lawrence A. Molnar[2], Samuel J. Van Kooten[2], Richard J. Greenberg[1], William F. Bottke[3]
[1.]University of Arizona, Tucson, AZ, United States. [2.]Calvin College, Grand Rapids, MI, United States. [3.]Southwest Research Institute, Boulder, CO, United States.

205.05 **A Map Of The Asteroid Belt By Taxonomic Class, Mass, Distance, And Size**
Francesca E. DeMeo[1], Benoit Carry[2, 3]
[1.]Massachusetts Institute of Technology, Cambridge, MA, United States. [2.]IMCCE, Paris, France. [3.]ESAC, Villanueva de la Canada, Madrid, Spain.

205.06 **Building Blocks of the Terrestrial Planets: Mineralogy of Hungaria Asteroids**
Michael Lucas[1], Joshua P. Emery[1]
[1]University of Tennessee, Knoxville, TN, United States.

205.07 **Near-Infrared Spectroscopy of Warm Spitzer-observed Near-Earth Objects**
Cristina A. Thomas[1], Joshua P. Emery[2], David E. Trilling[3], Marco Delbo[4], Joseph L. Hora[5], Michael Mueller[6]
[1]NASA GSFC/ ORAU, Greenbelt, MD, United States. [2]University of Tennessee, Knoxville, TN, United States. [3]Northern Arizona University, Flagstaff, AZ, United States. [4]Observatoire de la Cote d'Azur, Nice, France. [5]Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, United States. [6]SRON, 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 Delbo[3], Noemí Pinilla-Alonso[4], Joshua P. Emery[4], Humberto Campins[5], Julia de León[6]
[1]Instituto de Astrofísica de Canarias, La Laguna, Tenerife, Spain. [2]Departamento de Astrofísica, Universidad de La Laguna, La Laguna, Tenerife, Spain. [3]UNS-CNRS-Observatoire de la Cote d'Azur, Nice, France. [4]Department of Earth and Planetary Sciences, University of Tennessee, Knoxville, TN, United States. [5]Physics Department, University of Central Florida, Orlando, FL, United States.[6]Department 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 Barucci[1]
[1]LESIA Observatoire de Paris, Meudon, France. [2]Université Paris Diderot, Paris, France.

205.10 **Composition and Degree of Alteration of Dark Asteroids**
Margaret McAdam[1], Jessica M. Sunshine[1], Michael S. Kelley[1]
[1]University of Maryland , College Park , MD, United States.

205.11 **The Ch asteroids: Connecting a Visible Taxonomic Class to a 3-µm spectral shape**
Andrew S. Rivkin[1], Ellen S. Howell[2], Joshua P. Emery[3], Eric L. Volquardsen[4]
[1]JHU/APL, Laurel, MD, United States. [2]Arecibo Observatory, Arecibo, Puerto Rico, United States. [3]University of Tennessee, Knoxville, TN, United States. [4]IRTF, 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 Dotto[1], Davide Perna[2], Maria Antonietta Barucci[2], Fabrizio Bernardi[3], Sonia Fornasier[2, 4], Fiore De Luise[5], Ettore Perozzi[6, 7], Alessandro Rossi[8], John Robert Brucato[9]
[1]INAF - Oss. Astr. Roma/Univ. Roma TorVergata, Monteporzio Catone, RM, Italy. [2]LESIA Obs. Paris, Paris, France. [3]Spacedys, Cascina, PI, Italy. [4]Université Paris Diderot, Paris, France. [5]INAF - Oss. Astr. Teramo, Teramo, Italy. [6]Deimos Space, Madrid, Spain. [7]INAF - IAPS, Rome, Italy. [8]IFAC - CNR, Sesto Fiorentino, FI, Italy. [9]INAF - 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. Showalter[1], Imke de Pater[2], Robert S. French[1], Jack J. Lissauer[3]
[1]SETI Institute, Mountain View, CA, United States. [2]University of California, Berkeley, CA, United States. [3]NASA Ames Research Center, Moffett Field, CA, United States.

206.02 **Enceladus' Influence on the Vertical Structure of Saturn's E Ring**
Joseph A. Burns[1]
[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. Spilker[1], Cecile Ferrari[2], Ryuji Morishima[1, 3]
[1.]JPL, Pasadena, CA, United States. [2.]CEA Saclay/Univ. Paris [7,]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 Filacchione[1], Fabrizio Capaccioni[1], Mauro Ciarniello[1], Roger N. Clark[2], Phil D. Nicholson[3], Dale P. Cruikshank[4], Robert H. Brown[5], Jeffrey N. Cuzzi[4], Nico Altobelli[6], Linda J. Spilker[7], Matt M. Hedman[3], Cristina M. Dalle Ore[4], Priscilla Cerroni[1]
[1.]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 Zhang[1], Alex G. Hayes[1, 2], Michael A. Janssen[3], Philip D. Nicholson[1], Jeff N. Cuzzi[4]
[1.]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. Marley[1], Jason Jackiewicz[2]
[1.]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. Nicholson[1], Richard G. French[2], Matthew M. Hedman[1, 5], Joshua E. Colwell[3], Essam A. Marouf[4], Colleen McGhee[2], Kate Lonergan[2], Talia Sepersky[2]
[1.]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. Tiscareno[1], 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. French[1], Shannon K. Hicks[1], Mark R. Showalter[1], Adrienne K. Antonsen[1], Douglas R. Packard[2]
[1.]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. Spitale[1], Joseph M. Hahn[2]
[1.]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. Becker[1], Joshua E. Colwell[1], Larry W. Esposito[2]
[1.]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. Harbison[1], Philip Nicholson[1]
[1]Cornell 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. Barnes[1], Roger N. Clark[2], Christophe Sotin[3], Mate Adamkovics[4], Thomas Appere[5], Sebastien Rodriguez[5], Jason M. Soderblom[6], Robert H. Brown[7], Bonnie J. Buratti[3], Kevin H. Baines[8], Stephane Le Mouelic[9], Philip D. Nicholson[10]
[1]University of Idaho, Moscow, ID, United States. [2]USGS, Denver, CO, United States. [3]JPL, Pasadena, CA, United States. [4]UC Berkeley, Berkeley, CA, United States. [5]Laboratoire AIM, Paris, France. [6]MIT, Cambridge, MA, United States. [7]LPL, Tucson, AZ, United States. [8]U. Wisconsin, Madison, WI, United States. [9]Universite Nantes, Nantes, France. [10]Cornell University, Ithaca, NY, United States.

207.02 **Titan's Haystack: the 220 cm^{-1} ice cloud feature**
Carrie Anderson[1], Robert Samuelson[2], Donald Jennings[1], Richard Achterberg[2], F. M. Flasar[1]
[1]NASA GSFC, Greenbelt, MD, United States. [2]University of Maryland, College Park, MD, United States.

207.03 **Modeling Photochemical Processes on Titan: Comparison to Cassini Observations**
Yuk Yung[1], Cheng Li[1], Xi Zhang[2], Joshua A. Kammer[1], Mao-Chang Liang[3], Run-Lie Shia[1]
[1]Caltech, Pasadena, CA, United States. [2]University of Arizona, Tucson, AZ, United States. [3]RCEC Academia Sinica, Taipei, Taipei, Taiwan.

207.04 **Atmospheric Gravity Waves in Titan's Troposphere and Stratosphere**
Katia Matcheva[1], Darsa Donelan[1]
[1]University of Florida, Gainesville, FL, United States.

207.05 **Non-LTE diagnostics of CIRS observations of the Titan's mesosphere**
Alexander Kutepov[1,4], Sandrine Vinatier[2], Artem Feofilov[3], Conor Nixon[4], Corinne Boursier[5]
[1]The Catholic University of America , Washington, DC, United States. [2]LESIA, Observatoire de Paris-Meudon, Paris, France. [3]École Polytechnique/CNRS, Paris, France. [4]NASA/GSFC, Greenbelt, MD, United States. [5]LPMAA, 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 Corre[1], Vishnu Reddy[1], Nico Schmedemann[2], Kris J. Becker[3], David P. O'Brien[1], Naoyuki Yamashita[1], Patrick N. Peplowski[4], Thomas H. Prettyman[1], Jian-Yang Li[1], Edward A. Cloutis[5], Brett W. Denevi[4], Thomas Kneissl[2], Eric Palmer[1], Robert W. Gaskell[1], Andreas Nathues[6], Michael J. Gaffey[7], William B. Garry[8], Holger Sierks[6], Christopher T. Russell[9], Carol A. Raymond[10]
[1]Planetary Science Institute, Tucson, AZ, United States. [2]Freie Universitaet Berlin, Berlin, Germany. [3]Astrogeology Science Center, Flagstaff, AZ, United States. [4]Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States. [5]Department of Geography, University of Winnipeg, Winnipeg, MB, Canada. [6]Max-Planck-Institute for Solar System Research, Katlenburg-Lindau, Germany. [7]Department of Space Studies, University of North Dakota, Grand Forks, ND, United States. [8]NASA Goddard Spaceflight

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

208.02 **Indication of Melt Sheets on Vesta from Thermal Inertia Calculations**
Eric Palmer[1], Mark V. Sykes[1], Gaskell Robert[1], Jian-Yang Li[1]
[1.]Planetary Science Institute, Tucson, AZ, United States.
Contributing teams: The Dawn VIR Team

208.03 **Vesta - A Tale of Two Craters**
Uri Carsenty[1], S. F. Hviid[1], S. Mottola[1], R. Jaumann[1], C. A. Raymond[2], C. T. Russell[3]
[1.]DLR, Berlin, Germany. [2.]JPL, California Institute of Technology, Pasadena, CA, United States. [3.]UCLA, Institute of Geophysics, Los Angeles, CA, United States.

208.04 **Vesta's Crustal Properties from the Dawn Gravity Measurements**
Sami Asmar[1], Bruce G. Bills[1], Alex Konopliv[1], Ryan S. Park[1], Carol A. Raymond[1]
[1.]JPL, Pasadena, CA, United States.

208.05 **A Record of Multiple Cratering Events in the Vesta Asteroid Family**
Schelte J. Bus[1]
[1.]Univ. 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. Drummond[1], Benoit Carry[2], William J. Merline[3], Christophe Dumas[4], Heidi Hammel[5], Stephane Erard[6], Al Conrad[7], Peter Tamblyn[3], Clark Chapman[3]
[1.]Air Force Research Laboratory, Kirtland AFB, NM, United States. [2.]Observatoire de Paris, Paris, France. [3.]Southwest Research Institute, Boulder, CO, United States. [4.]European Southern Observatory, Santiago de Chile, Chile. [5.]Association of Universities for Research in Astronomy, Washington, DC, United States. [6.]Observatoire de Paris, Meudon Cedex, France. [7.]Max-Planck-Institut fuer Astronomie, Heidelberg, Germany.

208.07 **Latitudinal Spectral Variations on Asteroid 101955 Bennu**
Richard P. Binzel[1], Francesca DeMeo[1]
[1.]MIT, Cambridge, MA, United States.

208.08 **Physical Characterization of Binary Near-Earth Asteroid (153958) 2002 AM31**
Patrick A. Taylor[1], Ellen S. Howell[1], Michael C. Nolan[1], Alessondra Springmann[1], Marina Brozovic[2], Lance A. M. Benner[2], Joseph S. Jao[2], Jon D. Giorgini[2], Jean-Luc Margot[3], Julia Fang[3], Tracy M. Becker[4], Yanga R. Fernandez[4], Ronald J. Vervack[5], Petr Pravec[6], Peter Kusnirak[6], Lorenzo Franco[7], Andrea Ferrero[8], Adrian Galad[6, 9], Donald P. Pray[10], Brian D. Warner[11], Michael D. Hicks[2]
[1.]Arecibo Observatory, Arecibo, Puerto Rico, United States. [2.]Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States. [3.]University of California, Los Angeles, Los Angeles, CA, United States. [4.]University of Central Florida, Orlando, FL, United States. [5.]The Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States. [6.]Astronomical Institute, Academy of Sciences of the Czech Republic, Ondrejov, Czech Republic. [7.]Balzaretto Observatory, Rome, Italy. [8.]Bigmuskie Observatory, Mombercelli, Italy. [9.]Modra Observatory, Bratislava, Slovakia.[10.]Sugarloaf Mountain Observatory, South Deerfield, MA, United States. [11.]Palmer Divide Observatory/ MoreData!, Colorado Springs, CO, United States.

208.09 **Coordinated Time Resolved Spectrophotometry of Asteroid 163249 (2002 GT)**
Erin L. Ryan[1], Charles Woodward[2], Michael Gordon[2], Mark R. Wagner[4], Steve Chesley[3], Michael Hicks[3], Jana Pittichova[3], Petr Pravec[5]
[1.]ORAU-Goddard Space Flight Center, Greenbelt, MD, United States. [2.]Univ. of Minnesota, Minneapolis, MN, United States. [3.]JPL/Caltech, Pasadena, CA, United States. [4.]LBTO, Tucson, AZ, United States. [5.]Astron. Inst. Acad. Sci., Ondejov, Ondejov, Czech Republic.

208.10 **Thermal Emission Photometry of Deep Impact Flyby Target (163249) 2002 GT**
Lucy F. Lim[1], Nicholas A. Moskovitz[2], Javier Licandro[4], Joshua P. Emery[3], Vishnu Reddy[5], Faith Vilas[6]
[1.]NASA / GSFC, Greenbelt, MD, United States. [2.]MIT, Cambridge, MA, United States. [3.]U. Tennessee, Knoxville, TN, United States. [4.]Instituto Astrofísica de Canarias, Tenerife, Spain. [5.]Max Planck Institute for Solar System Research, Katlenburg-Lindau, Germany. [6.] PSI, Tucson, AZ, United States.
Contributing teams: The 2002 GT Observing Team

208.11 **The Asteroid 1998 QE2**
Alberto Q. Vodniza[1], Mario R. Pereira[1]
[1.]Physics, 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. Granahan[1]
[1.]SAIC, Bealeton, VA, United States.

208.13 **Numerical Studies of Electrostatic Dust Motion about Itokawa**
Christine Hartzell[1], Michael Zimmerman[2], Yu Takahashi[3], Daniel Scheeres[3]
[1.]California Institute of Technology, Pasadena, CA, United States. [2.]Goddard Space Flight Center, Greenbelt, MD, United States. [3.]University of Colorado at Boulder, Boulder, CO, United States.

208.14 **Contrasting Q-type Asteroid Regolith from the S-complex Through Polarimetry**
Chester Maleszewski[1], Robert S. McMillan[1], Paul S. Smith[1]
[1.]University of Arizona, Tucson, AZ, United States.

208.15 **An Investigation of the 3-?m Feature in M-Type Asteroids**
Zoe A. Landsman[1], Humberto Campins[1], Kelsey Hargrove[1], Noemí Pinilla-Alonso[2], Joshua Emery[2], Julie Ziffer[3]
[1.]University of Central Florida, Orlando, FL, United States. [2.]University of Tennessee, Knoxville, TN, United States. [3.]University of Southern Maine, Portland, ME, United States.

208.16 **2012 DA14 and Chelyabinsk: Same Day Coincidence?**
Clark R. Chapman[1]
[1.]Southwest Research Inst., Boulder, CO, United States.

208.17 **Application of a Shape-Based Thermophysical Model to Contact Binary Near-Earth Asteroids**
Sean Marshall[1], Ellen S. Howell[2], Christopher Magri[3], Ronald J. Vervack[4], Yanga R. Fernandez[5], Michael C. Nolan[2], Patrick A. Taylor[2], Alessondra Springmann[2]
[1.]Cornell University, Ithaca, NY, United States. [2.]Arecibo Observatory, Arecibo, Puerto Rico, United States. [3.]University of Maine at Farmington, Farmington, ME, United States. [4.] Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States. [5.] University of Central Florida, Orlando, FL, United States.

208.18 **Asteroid Thermal Properties Derived from Meteorite Data**
Guy Consolmagno[1], Robert J. Macke[1], Daniel T. Britt[2]
[1.]Specola Vaticana, Vatican City, Holy See (Vatican City State). [2.]University of Central Florida, Orlando, FL, United States.

208.19 **Constraints on Spin Axis and Thermal Properties of Asteroids in the WISE Catalog**
Eric M. MacLennan[1], Joshua P. Emery[1]
[1.]University of Tennessee, Knoxville, TN, United States.

208.20 **Asteroid Family Identification Using Physical Properties from WISE/NEOWISE**
Joseph R. Masiero[1], Amy Mainzer[1], James Bauer[1], Tommy Grav[2], Carolyn Nugent[1], Rachel Stevenson[1]
[1.]JPL, Pasadena, CA, United States. [2.]PSI, Tucson, AZ, United States.

208.21 **Albedo, Size and Taxonomy of the Small Body Populations Outside the Main Belt**
Tommy Grav[1], Amy Mainzer[2], James M. Bauer[2,3], Joseph R. Masiero[2,3], Carolyn R. Nugent[2], Rachel A. Stevenson[2]
[1]Planetary Science Institute, Bloomington, IN, United States. [2]Jet Propulsion Laboratory, Pasadena, CA, United States. [3]Infrared 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 Jedicke[1], Alan Fitzsimmons[3], Larry Denneau[1], Richard Wainscoat[1], Bryce Bolin[1]
[1]Institute for Astronomy, University of Hawaii in Manoa, Honolulu, HI, United States. [2]Comenius University, Bratislava, Slovakia. [3]Queen'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. Penteado[1], David Trilling[1], Cesar I. Fuentes[1]
[1]Northern Arizona University, Flagstaff, AZ, United States.

208.24 **Linnaeus: Boosting Near Earth Asteroid Characterization Rates**
Martin Elvis[1], Charlie Beeson[3,1], Jose Luis Galache[2,1], Francesca DeMeo[4,1], Ian Evans[1], Janet Evans[1], Nicholas Konidaris[5], Joan Najita[6], Lori Allen[6], Eric Christensen[7], Timothy Spahr[2,1]
[1]Harvard-Smithsonian CfA, Cambridge, MA, United States. [2]IAU Minor Planet Center, Cambridge, MA, United States. [3]University of Southampton, Southampton, United Kingdom. [4]Massachusetts Insitute of Technology, Cambridge, MA, United States. [5]California Insitute of Technology, Pasadena, CA, United States. [6]Kitt Peak National Observatory, Tucson, AZ, United States. [7]University of Arizona, Tucson, AZ, United States.

208.25 **Single vs. Multiple Transponders for Radio Tomography of Asteroids**
Sampsa Pursiainen[1,2], Mikko Kaasalainen[1]
[1]Tampere University of Technology, Tampere, Finland. [2]Aalto 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 Virkki[1], Karri Muinonen[1,2], Antti Penttilä[1]
[1]University of Helsinki, Helsinki, Finland. [2]Finnish Geodetic Institute, Masala, Finland.

208.27 **Follow-up and Characterization of NEOs with the LCOGT Network**
Tim Lister[1]
[1]Las Cumbres Observatory, Goleta, CA, United States.

208.28 **High Ecliptic Latitude Survey for Small Main-Belt Asteroids**
Tsuyoshi Terai[1], Jun Takahashi[2], Yoichi Itoh[2]
[1]National Astronomical Observatory of Japan, Mitaka, Tokyo, Japan. [2]University of Hyogo, Sayo, Hyogo, Japan.

208.29 **MP3C - the Minor Planet Physical Properties Catalogue: a New VO Service For Multi-database Query**
Paolo Tanga[1], Marco Delbo[1], Jerome Gerakis[1]
[1]Observatoire de La Côte D'Azur, Nice, Cedex [4]France, France.

208.30 **The Mission Accessible Near-Earth Objects Survey (MANOS)**
Paul Abell[1], Nicholas Moskovitz[2], David Trilling[3], Cristina Thomas[4], Mark Willman[5], Will Grundy[6], Henry Roe[6], Eric Christensen[7], Michael Person[2], Richard Binzel[2], David Polishook[2], Francesca DeMeo[2], Thomas Endicott[8], Michael Busch[9]
[1]NASA Johnson Space Center, Houston, TX, United States. [2]Massachusetts Institute of Technology, Cambridge, MA, United States. [3]Northern Arizona University, Flagstaff, AZ, United States. [4]NASA Goddard Space Flight Center, Greenbelt, MD, United States. [5]University of Hawaii, Honolulu, HI, United States. [6]Lowell Observatory, Flagstaff,

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

208.31 **A Search for Volatiles and Spectral Variation on the Surfaces of Trojan Asteroids**
Joshua P. Emery[1], Richard G. Ness[1], Michael P. Lucas[1]
[1]University of Tennessee, Knoxville, TN, United States.

208.32 **A Search for Colorful Characters Among the Jupiter Greeks and Trojans**
Joseph Chatelain[1], Tiffany Pewett[1], Todd Henry[1], Linda French[2], Jennifer Winters[1]
[1]Georgia State University, Atlanta, GA, United States. [2]Illinois Wesleyan University, Bloomington, IL, United States.

208.33 **Search for Meter-sized Bodies in Meteoroid Streams**
Marco Micheli[1], David J. Tholen[1]
[1]Institute for Astronomy - University of Hawaii, Honolulu, HI, United States.

TUE

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 Blecic[1], Ryan A. Hardy[1, 3], Matthew Hardin[1, 4]
[1]University of Central Florida, Orlando, FL, United States. [2]Max Planck Institut für Astronomie, Heidelberg, Germany. [3]University of Colorado at Boulder, Boulder, CO, United States. [4]Clemson 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. Twicken[1], Bruce D. Clarke[1], Forrest Girouard[2], Todd C. Klaus[2], Jie Li[1], Sean D. McCauliff[2], Elisa V. Quintana[1], Shawn E. Seader[1], Peter Tenenbaum[1], Jon M. Jenkins[1], Natalie M. Batalha[3], Stephen T. Bryson[3], Christopher J. Burke[1], Douglas A. Caldwell[1], Jason F. Rowe[1]
[1]SETI Institute, Mountain View, CA, United States. [2]Orbital Sciences Corporation, Moffett Field, CA, United States. [3]NASA 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 Gaillard[1], Denise Stephens[1], Jessica Larson[1], Emily Ranquist[1], Emily Stoker[1], Joseph Rawlins[1]
[1]BYU, Provo, UT, United States.

209.04 **Photometric Observations of Transiting Planet Candidates With a Small Telescope**
Emily Stoker[1], Denise Stephens[1], Pamela Lara[2], Emily Ranquist[1]
[1]Brigham Young University, Provo, UT, United States. [2]Utah 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]
[1]Brigham Young University, Provo, UT, United States. [2]Utah Valley University, Orem, UT, United States.
Contributing teams: Dr. Denise Stepehns, Dr. Michael Joner

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]
[1.]SETI Institute, Mountain View, CA, United States. [2.]NASA Ames Research Center, Moffett Field, CA, United States.

209.07 **Computational Challenges in Processing the Q1-Q16 Kepler Data Set**
Todd C. Klaus[1], Christopher Henze[2], Joseph D. Twicken[3], Jennifer Hall[1], Sean D. McCauliff[1], Forrest Girouard[1], Miles Cote[2], Robert L. Morris[3], Bruce Clarke[3], Jon M. Jenkins[3], Douglas Caldwell[3]
[1.]Orbital Sciences Corp., Moffett Field, CA, United States. [2.]NASA Ames Research Center, Mountain View, CA, United States. [3.]SETI 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. Webber[1], Nikole Lewis[1], Mark Marley[2], Jonathan Fortney[3], Kerri Cahoy[1]
[1.]EAPS, MIT, Cambridge, MA, United States. [2.]NASA Ames, Moffett Field, CA, United States. [3.]University 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 Baudino[1], Bruno Bézard[1], Anthony Boccaletti[1], Anne-Marie Lagrange[2], Mickael Bonnefoy[3]
[1.]Observatoire de Paris, Meudon, France. [2.]UJF-Grenoble[1]/CNRS-INSU, Grenoble, France. [3.]MPIA, Heidelberg, Germany.

209.10 **Formation of Atmospheric Jets and Vortices: From Gas Giants to Brown Dwarfs**
Xi Zhang[1], Adam P. Showman[1]
[1.]University of Arizona, Tucson, AZ, United States.

209.11 **"Exploring atmospheres of Mini-Neptunes orbiting different stars: the effect of stellar flares"**
Yamila Miguel[1], Lisa Kaltenegger[1, 2]
[1.]Max Planck Institute for Astronomy, Heildeberg, Baden-Wuttemberg, Germany. [2.]CfA, Cambridge, MA, United States.

209.12 **Exoplanet Equilibrium Chemistry Calculations**
Sarah Blumenthal[1], Joseph Harrington[1], M. Oliver Bowman[1], Jasmina Blecic[1]
[1.]University of Central Florida, Orlando, FL, United States.

209.13 **Spectral Fingerprints of Mini and Super Earths**
Sarah Rugheimer[1], Lisa Kaltenegger[1, 2], Dimitar Sasselov[1]
[1.]Harvard Smithsonian Center for Astrophysics, Cambridge, MA, United States. [2.]Max Planck Institute for Astronomy, Heidelberg, Germany.

209.14 **The Effects of Refraction on Transit Transmission Spectroscopy**
Amit Misra[1], Victoria Meadows[1]
[1.]University 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. Fortney[4], Andrew S. Foster[1], Patricio E. Cubillos[1, 3], Ryan A. Hardy[1, 5], Oliver Bowman[1], Jasmina Blecic[1], Joel D. Hartman[6], Gaspar Á. Bakos[6]
[1.]University of Central Florida, Orlando, FL, United States. [2.]Clemson University, Clemson, SC, United States. [3.]Max-Planck-Institut für Astronomie, Heidelberg, Germany. [4.]University of California Santa Cruz, Santa Cruz, CA, United States. [5.]University of Colorado Boulder, Boulder, CO, United States. [6.]Princeton University, Princeton, NJ, United States.

209.16 **Secondary Eclipse Observations of the Low-Mass Hot-Jupiter WASP-11b/HAT-P-10b**
M. Oliver Bowman[1], Joseph Harrington[1], Jasmina Blecic[1], Andrew Foster[1], Kevin B. Stevenson[2], Patricio Cubillos[1], Andrew Collier Cameron[3]
[1.]University of Central Florida, Orlando, FL, United States. [2.]University of Chicago, Chicago, IL, United States. [3.]SUPA, 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 Rehnberg[1], Larry W. Esposito[1], Miodrag Sremčević[1], Bonnie K. Meinke[2]
[1.]University of Colorado - Boulder, Boulder, CO, United States. [2.]Space 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-Winter[1], Rafael Sfair[1], Décio C. Mourão[1]
[1.]Campus De Guaratingueta UNESP, Guaratingueta, SP, Brazil, Brazil.

210.03 **Predator-Prey Model for Haloes in Saturn's Rings**
Larry W. Esposito[1], Prasanna Madhusudhanan[1], Joshua E. Colwell[2], E. Todd Bradley[2], Miodrag Sremcevic[1]
[1.]Univ. of Colorado, Boulder, CO, United States. [2.]University of Central Florida, Orlando, FL, United States.

210.04 **Looking Forward to Cassini's Proximal Orbits: the Innermost Radiation Belt of Saturn**
John F. Cooper[1], Peter Kollmann[2], Chris Paranicas[2], Donald G. Mitchell[2], Matthew M. Hedman[3], Scott G. Edgington[4], Edward C. Sittler[1], Richard E. Hartle[1], Robert E. Johnson[5], Steven J. Sturner[6]
[1.]NASA Goddard Space Flight Center, Greenbelt, MD, United States. [2.]Applied Physics Laboratory Johns Hopkins University, Laurel, MD, United States. [3.]Cornell University, Ithaca, NY, United States.[4.]NASA Jet Propulsion Laboratory, Pasadena, CA, United States. [5.]University of Virginia, Charlottesville, VA, United States. [6.]CRESST / 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 Spilker[2], Neal Turner[2]
[1.]University of California Los Angels, Los Angeles, CA, United States. [2.]Jet Propulsion Laborarory, 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. Colwell[1], Richard G. Jerousek[1], Philip D. Nicholson[2], Matthew M. Hedman[3], Larry W. Esposito[4], Rebecca Harbison[2], Robert A. West[5]
[1.]University of Central Florida, Orlando, FL, United States. [2.]Cornell University, Ithaca, NY, United States. [3.]University of Idaho, Moscow, ID, United States. [4.]University of Colorado, Boulder, CO, United States. [5.]Jet Propulsion Laboratory, CalTech, Pasadena, CA, United States.

210.07 **Higher Order Moments in the Statistics of Stellar Occultations of Saturn's Rings**
James Cooney[1], Joshua E. Colwell[1], Larry W. Esposito[2]
[1.]University of Central Florida, Orlando, FL, United States. [2.]Laboratory for Atmospheric and Space Physics, University of Colorado, Boulder, CO, United States.

210.08 Hydrodynamic Simulations of Planetary Rings
Jacob Miller[1], G. R. Stewart[1], L. W. Esposito[1]
[1.]University of Colorado, Boulder, CO, United States.

210.09 Compositional and Mixing Model Analysis of Cassini UVIS Spectra of Saturn's Rings
Todd Bradley[1], Joshua Colwell[1], Larry Esposito[2], Roger Clark[3]
[1.]University of Central Florida, Orlando, FL, United States. [2.]University of Colorado, Boulder, CO, United States. [3.]United States Geological Survey, Denver, CO, United States.

210.10 Modeling Saturnshine in Cassini Images of the Rings
Henry C. Dones[1], John W. Weiss[2, 3], Carolyn C. Porco[2], Daiana DiNino[2], Ryan Skinner[4]
[1.]Southwest Research Inst., Boulder, CO, United States. [2.]Cassini Imaging Central Laboratory for Operations, Boulder, CO, United States. [3.]Saint Martin's University, Lacey, WA, United States.[4.]Carleton College, Northfield, MN, United States.

TUE

210.11 Mapping the Thermal Inertia of Saturn's Rings with Cassini CIRS
Shawn M. Brooks[1], Linda J. Spilker[1], Stuart H. PIlorz[2], Mark R. Showalter[2]
[1.]JPL, Pasadena, CA, United States. [2.]SETI Institute, Mountain View, CA, United States.

210.12 Analysis of Bending Waves in Saturn's Rings with Cassini UVIS Stellar Occultations
Allison Bratcher[1], Joshua E. Colwell[1]
[1.]University of Central Florida, Orlando, FL, United States.

210.13 Saturn's Maxwell Ringlet from Cassini UVIS Observations
Nicole Albers[1], Miodrag Sremcevic[1], Larry W. Esposito[1]
[1.]LASP/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]
[1.]LESIA - Paris Observatory, Meudon, France. [2.]IMCCE Paris Observatory, Paris, France. [3.] UPMC University , Paris, France. [4.]Lille [1] University, Lille, France.

210.15 The effects of Micrometeoroid Bombardment and Ballistic Transport on the C Ring's Structure.
Paul R. Estrada[1], Jeff N. Cuzzi[2]
[1.]CSC, SETI Institute, Mountain View, CA, United States. [2.]NASA 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 Muinonen[3]
[1.]Jet Propulsion Laboratory NASA, Pasadena, CA, United States. [2.]SETI, Mountain View, CA, United States. [3.]University of Helsinki, Helsinki, Finland.

210.17 Cassini UVIS highest resolution occultations of Saturn's rings
Miodrag Sremcevic[1], Larry W. Esposito[1], Josh Colwell[2]
[1.]Univ. of Colorado, Boulder, Boulder, CO, United States. [2.]University 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. Kraft[1], Almus Kenter[1], Stephen Murray[2, 1], Graziella Branduardi-Raymont[3], Martin Elvis[1], George Fraser[4], Randall Smith[1], William Forman[1], Christine Jones[1], Elke Roediger[5, 1]
[1.]Harvard-Smithsonian, CfA, Cambridge, MA, United States. [2.]Johns Hopkins University,

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

211.02 **The Earth-orbiting EUV spectroscope (EXCEED) on board the SPRINT-A mission**
Kazuo Yoshioka[1], Ichiro Yoshikawa[2], Fuminori Tsuchiya[3]
[1.]Japan Aerospace Exploration Agency, Sagamihara, Kanagawa, Japan. [2.]The University of Tokyo, Bunkyo-ku, Tokyo, Japan. [3.]Tohoku 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. Schneider[1]
[1.]LASP, U. Colorado, Boulder, CO, United States.
Contributing teams: IUVS Science Team

211.04 **The Ultraviolet Spectrograph (UVS) on ESA's JUICE Mission**
Randy Gladstone[1], Kurt Retherford[1], Andrew Steffl[2], John Eterno[1], Michael Davis[1], Maarten Versteeg[1], Thomas Greathouse[1], Mary Frances Araujo[1], Brandon Walther[1], Kristian Persson[1], Steve Persyn[1], Greg Dirks[1], Melissa McGrath[3], Paul Feldman[4], Fran Bagenal[5], John Spencer[2], Eric Schindhelm[2], Leigh Fletcher[6]
[1.]Southwest Research Institute, San Antonio, TX, United States. [2.]Southwest Research Institute, Boulder, CO, United States. [3.]NASA/MSFC, Huntsville, AL, United States. [4.]The Johns Hopkins University, Baltimore, MD, United States. [5.]LASP/CU, Boulder, CO, United States. [6.]Oxford 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. Harris[1], S. Sona Hosseini[2]
[1.]University of Arizona, Tucson, AZ, United States. [2.]University of California, Davis, Davis, CA, United States.

211.06 **Occultations with the LCOGT network.**
Federica Bianco[1, 2], Timothy Lister[1], Andrew Pickles[1], Wayne Rosing[1], Timothy Brown[1]
[1.]New York University, New York, NY, United States. [2.]Las 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 Roman[1], Dean Hines[1], Jason Kalirai[1], Max Mutchler[1]
[1.]STScI, Baltimore, MD, United States.

211.08 **Solar System Science with the James Webb Space Telescope**
Heidi B. Hammel[1, 2], J. Norwood[3], N. Chanover[3], D. C. Hines[4], J. Stansberry[4], J. I. Lunine[5], M. S. Tiscareno[5], S. N. Milam[6], G. Sonneborn[6], M. Brown[7]
[1.]AURA, Washington, DC, United States. [2.]SSI, Boulder, CO, United States. [3.]NMSU, Las Cruces, NM, United States. [4.]STScI, Baltimore, MD, United States. [5.]Cornell, Ithaca, NY, United States. [6.]GSFC, Greenbelt, MD, United States. [7.]Caltech, Pasadena, CA, United States.

211.09 **Solar System Observing Capabilities With The James Webb Space Telescope**
George Sonneborn[1], Stefanie N. Milam[1], Dean C. Hines[2], John Stansberry[2], Heidi B. Hammel[3], Jonathan I. Lunine[4]
[1.]NASA's GSFC, Greenbelt, MD, United States. [2.]STScI, Baltimore, MD, United States. [3.]AURA, Washington, DC, United States. [4.]Cornell Univ., Ithaca, NY, United States.

211.10 **SOFIA: Review of Initial Science Operations, 2010 - 2013**
Allan W. Meyer[1]
[1.]USRA / SOFIA, Moffett Field, CA, United States.

211.11 **The NASA Infrared Telescope Facility: Instrument Upgrades and Plans**
Alan T. Tokunaga[1], Schelte J. Bus[1], Michael S. Connelley[1], John T. Rayner[1]
[1.]Univ. of Hawaii, Honolulu, HI, United States.

211.12 **A Multi-Color Simultaneous Imager Instrument Concept for the IRTF**
Michael Connelley[1], Alan Tokunaga[1], Schelte Bus[1]
[1.]University of Hawaii, Hilo, HI, United States.

211.13 **An Approach to Spectropolarimetry for Solar System Exploration**
William B. Sparks[1]
[1.]STScI, Baltimore, MD, United States.

211.14 **Mission Concepts Enabled by Solar Electric Propulsion and Advanced Modular Power Systems**
Kurt K. Klaus[1], Michael S. Elsperman[1], Ford Rogers[1]
[1.]The Boeing Company, Huntington Beach, CA, United States.

211.15 **Venus Atmospheric Maneuverable Platform (VAMP)**
Kristen L. Shapiro Griffin[1], Daniel Sokol[1], Dean Dailey[1], Greg Lee[1], Ron Polidan[1]
[1.]Northrop Grumman, Redondo Beach, CA, United States.

211.16 **Mars Mission Concepts: SAR and Solar Electric Propulsion**
Michael Elsperman[1], Stephen Clifford[2], Samuel Lawrence[3], Kurt Klaus[1], David Smith[1]
[1.]The Boeing Company, Huntington Beach, CA, United States. [2.]Lunar and Planetary Institute, Houston, TX, United States. [3.]Arizona State University, Tempe, AZ, United States.

211.17 **Mars 2020 Science Rover: Science Goals and Mission Concept**
John F. Mustard[1], Dave Beaty[2], Deborah Bass[2]
[1.]Brown University, Providence, RI, United States. [2.]Jet Propulsion Laboratory, Pasadena, CA, United States.

211.18 **Planetary Surface Exploration Using Raman Spectroscopy on Rovers and Landers**
Jordana Blacksberg[1], Erik Alerstam[1], Yuki Maruyama[1], Edoarod Charbon[3], George R. Rossman[2]
[1.]Jet Propulsion Laboratory, Pasadena, CA, United States. [2.]California Institute of Technology, Pasadena, CA, United States. [3.]Delft University of Technology, Delft, Netherlands.

211.19 **Advanced Mass Spectrometry for In Situ Analysis of Comet and Primitive Asteroid Composition**
Stephanie Getty[1], Paul R. Mahaffy[1], William B. Brinckerhoff[1], Mehdi Benna[2, 1], Ricardo D. Arevalo[1], Timothy Cornish[3], Jamie Elsila[1]
[1.]NASA Goddard Space Fight Center, Greenbelt, MD, United States. [2.]University of Maryland Baltimore County, Baltimore, MD, United States. [3.]C&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. Scheeres[1], Patrick Michel[2]
[1.]The University of Colorado at Boulder, Boulder, CO, United States. [2.]Observatoire de la Côte d'Azur, Nice, France.

211.21 **Castalia: A European Mission to a Main Belt Comet**
Colin Snodgrass[1]
[1.]Max 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. Smith[1], Kurt Klaus[3], John Behrens[2], Gary Bingaman[2], Michael Elsperman[2], Jerry Horsewood[4]
[1.]Boeing, Arlington, VA, United States. [2.]Boeing, Huntington Beach, CA, United States. [3.]Boeing, Houston, TX, United States. [4.]Space 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 Alcock[1], Stephen Murray[1], Ralph Kraft[1], Almus Kenter[1], Pavlos Protopapas[1], Michael Werner[2], Roger Lee[2]
[1.]Harvard-Smithsonian, CfA, Cambridge, MA, United States. [2.]JPL, Pasadena, CA, United States.

211.24 **A Discovery Mission to Determine the Interior Structure of Gas- and Ice-Giants**
Mark D. Hofstadter[1], Neil Murphy[1], Steve Matousek[1], Sarah Bairstow[1], Frank Maiwald[1], Stuart Jeffries[2], Francois-Xavier Schmider[3], Tristan Guillot[4]
[1.]JPL/Caltech, Pasadena, CA, United States. [2.]Univ. Hawaii, Oahu, HI, United States. [3.]Univ. de Nice, Nice, France. [4.]Obs. Cote d'Azur, Nice, France.

211.25 **The Exoplanet Characterisation Observatory (EChO) : an ESA mission to characterize exoplanets**
Pierre Drossart[1], Paul Hartogh[2], Kate Isaak[3], Christophe Lovis[4], Giusi Micela[5], Marc Ollivier[6], Ignasi Ribas[7], Ignas Snellen[8], Bruce Swinyard[9], Giovanna Tinetti[9], Ludovic Puig[3], Martin Linder[3]
[1.]LESIA, Observatoire de Paris, Meudon, France. [2.]Max-Planck Institut für Solar System Research, Katlenburg-Lindau, Germany. [3.]ESA-ESTEC, Science and Robotic Exploration Directorate, Noordwijk, Netherlands. [4.]University of Geneva, Geneva, Switzerland. [5.]INAF Osservator io Astronomico di Palermo, Palermo, Italy. [6.]Institut d'Astrophysique, Orsay, France. [7.]Institut de Cienci es de l'Espai, Barcelona, Spain. [8.]Leiden Observatory, Leiden, Netherlands. [9.]University 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. Morgan[1], Stephanie A. McLaughlin[2], Edwin J. Grayzeck[1], William P. Knopf[3], Faith Vilas[4], Daniel J. Crichton[5]
[1.]NASA/Goddard Space Flight Center, Greenbelt, MD, United States. [2.]Telophase Corporation, Arlington, VA, United States. [3.]NASA/Headquarters, Washington, DC, United States. [4.]Planetary Science Institute, Tucson, AZ, United States. [5.]NASA/Jet Propulsion Laborator, Pasadena, CA, United States.

211.27 **BRRISON Mission Design and Development**
Terence O'Malley[1], Tibor Kremic[1], Dewey Adams[2], Steve Arnold[2], Andrew Cheng[2]
[1.]NASA/GRC, Cleveland, OH, United States. [2.]JHU/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]
[1.]NASA Headquarters, Washington, DC, United States. [2.]Smart Data Solutions, Washington, DC, United States.

211.29 **TRIDENT: Taking Remote and In-situ Data to Explore Neptune and Triton**
Sona Hosseini[1], Paul Ries[2], Philip Fernandes[3], Mike Malaska[2], Jennifer Scully[4], Ryan Clegg[5], Alex Patthoff[2], Farah Alibay[6], Jason Leonard[7], Kyle Uckert[8], Mackenzie Day[9], Michael Hutchins[10], Nicolas Fougere[11], Patricia Craig[12], Ryan McGranaghan[7], Zachary Girazian[13], Karl Mitchell[2], Charles Budney[2]
[1.]University of California, Davis, Woodland, CA, United States. [2.]Jet Propulsion Laboratory, Pasadena, CA, United States. [3.]Dartmouth College, Hanover, NH, United States. [4.] University of California Los Angeles, Los Angeles, CA, United States. [5.]Washington University in St. Louis, St. Louis, MO, United States. [6.]Massachusetts Institute of Technology, Cambridge, MA, United States. [7.]University of Colorado Boulder, Boulder, CO, United States. [8.]New Mexico State Univ., Las Cruces, NM, United States. [9.]University of Texas at Austin, Austin, TX, United States. [10.]University of Washington, Seattle, WA, United States. [11.]University of Michigan, Ann Arbor, MI, United States. [12.]Johnson Space Center, Houston, TX, United States. [13.]Boston University, Boston, MA, United States.

212 Agency Night

Attendee Event 07:30 PM to 09:00 PM in Plaza ABC

Chair: Rosaly Lopes

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 Batygin[1], Fred C. Adams[2]
[1.]Harvard-Smithonian Center for Astrophysics, Cambridge, MA, United States. [2.]University of Michigan, Ann Arbor, MI, United States.

300.02 **Distribution of Spin-Orbit misalignments: disk-torquing is compatible with observations**
Aurelien Crida[1], Konstantin Batygin[2]
[1.]Univ. Nice sophia antipolis / Obs. Cote d'Azur, Nice, France. [2.]Harvard CfA, Cambridge, MA, United States.

300.03 **The high multiplicity systems Gliese 667C and KOI 3158**
Christa L. Van Laerhoven[1], Daniel Fabrycky[2], Richard Greenberg[1]
[1.]University of Arizona, Tucson, AZ, United States. [2.]University of Chigaco, Chicago, IL, United States.

300.04 **Putting the Chaos and Instability of the Terrestrial Planets in Context**
Nathan A. Kaib[1], Yoram Lithwick[1], Sean N. Raymond[2, 3]
[1.]CIERA, Northwestern University, Evanston, IL, United States. [2.]Univ. Bordeaux, Floirac, France. [3.]CNRS, Floirac, France.

300.05 **In-situ Planet Formation: Implications for Planets near Resonances**
Renu Malhotra[1], Cristobal Petrovich[2], Scott Tremaine[3]
[1.]University of Arizona, Tucson, AZ, United States. [2.]Princeton Unversity, Princeton, NJ, United States. [3.]Institute for Advanced Study, Princeton, NJ, United States.

300.06 **Anomalies in the architectures of Kepler systems**
Jason H. Steffen[1]
[1.]Northwestern University, Evanston, IL, United States.
Contributing teams: Kepler

300.07 **Measuring the Masses and Radii of Sub-Neptunes with Transit Timing Variations.**
Daniel Jontof-Hutter[1], Jack J. Lissauer[1], Jason F. Rowe[1], Daniel Fabrycky[2]
[1.]NASA Ames Research Center, Moffett Field, CA, United States. [2.]University of Chicago, Chicago, IL, United States.

300.08 **SMACK: A New Algorithm for Modeling Collisions and Dynamics of Planetesimals in Debris Disks**
Erika Nesvold[1], Marc J. Kuchner[2], Hanno Rein[3, 4], Margaret Pan[2]
[1.]University of Maryland, Baltimore County, Baltimore, MD, United States. [2.]NASA Goddard Space Flight Center, Greenbelt, MD, United States. [3.]University of Toronto, Scarborough, Toronto, ON, Canada. [4.]Institute for Advanced Study, Princeton, NJ, United States.

300.09 **Circumplanetary Debris Disks and Consequences of an Eccentric Fomalhaut b**
Daniel Tamayo[1], Joseph A. Burns[1]
[1.]Cornell 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

301.01 **Using a Radar Shape Model to Interpret Spectral Observations of near-Earth Asteroid 4179 Toutatis**
Ellen S. Howell[1], Michael W. Busch[2], Vishnu Reddy[3], Ronald J. Vervack[4], Michael C. Nolan[1], Christopher Magri[5], Yanga R. Fernandez[6], Patrick A. Taylor[1], Alessondra Springmann[1], Juan A. Sanchez[7], Daniel J. Scheeres[8], Yu Takahashi[8]
[1.]NAIC, Arecibo Observatory, Arecibo, Puerto Rico, United States. [2.]NRAO, Socorro, NM, United States. [3.]PSI, Tucson, AZ, United States. [4.]JHU/APL, Columbia, MD, United States. [5.]U. Maine at Farmington, Farmington, ME, United States. [6.]U. Central Florida, Orlando, FL, United States. [7.]MPI, Karlenburg-Lindau, Germany. [8.]U. Colorado, Boulder, CO, United States.

301.02 **Rotation Induced Disruption of Cohesive Asteroids**
Diego Sanchez Lana[1], Daniel J. Scheeres[1]
[1.]University of Colorado at Boulder, Boulder, CO, United States.

301.03 **The Effect of Rotation on Mass Loss in Simulations of Rubble-Pile Collisions**
Ronald Ballouz[1], Derek C. Richardson[1], Patrick Michel[2], Steve Schwartz[1]
[1.]Astronomy, University of Maryland College Park, College Park, MD, United States. [2.] University 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 Keane[1], Isamu Matsuyama[1]
[1.]University of Arizona, Tucson, AZ, United States.

301.05 **Global Landslides on Rapidly Spinning Spheroids**
Daniel J. Scheeres[1], Paul Sanchez[1]
[1.]University of Colorado, Boulder, CO, United States.

301.06 **Lutetia's lineaments**
Sebastien Besse[1], Michael Kuppers[2], Johannes Benkhoff[1], Olivier Barnouin[3]
[1.]ESTEC/ESA, Noordwijk, Netherlands. [2.]ESAC/ESA, Villanueva de la Canada, Spain. [3.]John Hopkins Applied Phisyic Laboratory, Laurel, MD, United States.

301.07 **Small asteroids – rubble piles or boulders?**
Alan W. Harris[1]
[1.]MoreData!, 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 Rossi[1], Seth Jacobson[2], Francesco Marzari[3], Dan Scheeres[4], Donald R. Davis[5]
[1.]IFAC-CNR, Firenze, Italy. [2.]Observatoire de la Côte d'Azur, CNRS, Nice, France. [3.] Dipartimento di Fisica e Astronomia, Padova, Italy. [4.]Dept. of Aerospace Engineering Sciences, Univ. of Colorado Boulder, Boulder, CO, United States. [5.]Planetary Sicence Institute, Tucson, AZ, United States.

301.09 **Asteroid failure modes due to YORP spin-up: A survey**
Masatoshi Hirabayashi[1], Daniel J. Scheeres[1]
[1.]University 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. Hamilton[1]
[1.]Univ. of Maryland, College Park, MD, United States.

302.02 **Interior Models for Saturn's Moon Titan Consistent with Cassini Observations**
Julie Castillo-Rogez[1]
[1.]JPL/CalTech, Pasadena, CA, United States.

302.03 **Infrared Study of Liquid / Solid Hydrocarbons and their Mixtures under Titan Conditions**
Sandeep Singh[1], Vincent Chevrier[1], Larry Roe[1], Adrienn Luspay-Kuti[1], Amanda Wagner [1]
[1.]University of Arkansas , Fayettevillle , AR, United States.

302.04 **Evidence of Titan's Climate History from Evaporite Distribution**
Shannon MacKenzie[1], Jason W. Barnes[1], Robert Brown[2], Christophe Sotin[2], Bonnie J. Buratti[3], Roger Clark[4], Kevin H. Baines[5], Phillip D. Nicholson[6], Stephane Le Mouelic[7], Sebastien Rodriguez[8]
[1.]University of Idaho, Moscow, ID, United States. [2.]Lunar and Planetary Laboratory University of Arizona, Tucson, AZ, United States. [3.]Jet Propulsion Laboratory California Institute of Technology, Pasadena, CA, United States. [4.]U.S. Geological Survey, Denver, CO, United States. [5.]Space Science and Engineering Center University of Wisconsin-Madison, Madison, WI, United States. [6.]Cornell University, Ithaca, NY, United States. [7.]Laboratoire de Planetologie et Geodynamique Universite de Nantes, Nantes, France. [8.]Laboratoire AIM Paris Diderot University , Paris, France.

302.05 **Titan's dry lakebeds chemical composition and lakes formation time-scale**
Daniel Cordier[1], Jason Barnes[2], Abel Ferreira[3], Thomas Cornet[4]
[1.]Institut UITNAM, Besançon, Franche-Comté, France. [2.]Department of Physics, University of Idaho, Engineering-Physics Building, Moscow, ID, United States. [3.]Departamento de Engenharia Quimica, Universidade de Coimbra, Coimbra, Portugal. [4.]Université de Nantes, Nantes, France.

302.06 **Titan's "blandlands": nature, distribution, and possible origin of Titan's plains**
Rosaly M. Lopes[1], Michael J. Malaska[1], Alice Le Gall[2], Alexander Hayes[3], Karl L. Mitchell[1], Randolph Kirk[4], Jani Radebaugh[5], Catherine Neish[6], Ellen Stofan[7], Michael Janssen[1], Steven D. Wall[1], Antoine Lucas[8], Ralph D. Lorenz[9]
[1.]JPL, Pasadena, CA, United States. [2.]LATMOS, Universite Versailles Saint Quentin, Guyancourt, France. [3.]Cornell University, Ithaca, NY, United States. [4.]USGS , Flagstaff, AZ, United States. [5.]Brigham Young University, Provo, UT, United States. [6.]NASA GSFC, Greenbelt, MD, United States. [7.]Proxemy Research, Laytonsville, MD, United States. [8.]Laboratoire AIM, Universite Paris-Diderot-CEA-Saclay-, Gif sur Yvette, France. [9.]Johns Hopkins University APL, Laurel, MD, United States.
Contributing teams: Cassini RADAR Team

302.07 **Elevation Distribution of Titan's Craters Suggests Extensive Wetlands**
Catherine Neish[1], Ralph Lorenz[2]
[1.]The Florida Institute of Technology, Melbourne, FL, United States. [2.]The 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 CH_4?**
Ashley Davies[1], Christophe Sotin[1], Mathieu Choukroun[1], Dennis L. Matson[1], Torrence V. Johnson[1]
[1.]Jet 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 Coustenis[1], Mathieu Hirtzig[3,1], Sebastien Rodriguez[4], Katrin Stephan[5], Stephane Le Mouélic[6], Pierre Drossart[1], Emmanuel Bratsolis[7], Ralf Jaumann[5], Rosaly M. Lopes[8], Konstantinos Kyriakopoulos[2], Christophe Sotin[8,6], Robert H. Brown[9]
[1.]LESIA -Observatoire de Paris, Paris, France. [2.]Department of Geology & Geoenvironment -University of Athens , Athens, Greece. [3.]Fondation "La main à la pâte", Paris, France. [4.] Laboratoire AIM, Université Paris Diderot, Paris [7/]CNRS/CEA-Saclay, DSM/IRFU/SAp, Paris, France. [5.]DLR, Institute of Planetary Research, Berlin, Germany. [6.]Laboratoire de Planétologie et Géodynamique -Université de Nantes, Nantes, France. [7.]Department of Physics -University of Athens , Athens, Greece. [8.]Jet Propulsion Laboratory, Pasadena, CA, United States. [9.]Lunar 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. Grundy[1], Cathy B. Olkin[2], Leslie A. Young[2], Marc W. Buie[2], Eliot F. Young[2]
[1.]Lowell Obs., Flagstaff, AZ, United States. [2.]Southwest Research Inst., Boulder, CO, United States.

303.02 **Interpreting the Shifted CH_4 Spectra of Pluto and Triton**
Laurence M. Trafton[1]
[1.]Univ. of Texas, Austin, Austin, TX, United States.

303.03 **Absorption Coefficients of the Methane-Nitrogen Binary Ice System: Implications for Pluto**
Silvia Protopapa[1], Will Grundy[2], Stephen Tegler[3], Justin Bergonio[4], Hermann Boehnhardt[5], Luis Barrera[6]
[1.]University of Maryland, Department of Astronomy, College Park, MD, United States. [2.] Lowell Observatory, Flagstaff, AZ, United States. [3.]Department of Physics and Astronomy, Northern Arizona University, Flagstaff, AZ, United States. [4.]Department of Physics and Astronomy, University of Hawai'i, Manoa Honolulu, HI, United States. [5.]Max-Planck Institute for Solar System Research, Katlenburg-Lindau, Germany. [6.]Universidad Metropolitana de Ciencias de la Educacion, Santiago, Chile.

303.04 **FUV Studies of Pluto and Its Satellites: From HST to New Horizons**
Eric Schindhelm[1], Alan Stern[1], Randy Gladstone[1]
[1.]Southwest Research Institute, Boulder, CO, United States.

303.05 **Satellite formation around Pluto-Charon**
Benjamin C. Bromley[1], Scott J. Kenyon[2]
[1.]University of Utah, Salt Lake City, UT, United States. [2.]Smithsonian Astrophysical Observatory, Cambridge, MA, United States.

303.06 **Cometary Impacts Produce Transient Atmospheres on Charon**
S. A. Stern[1], Randal Gladstone[2]
[1.]SwRI, Longmont, CO, United States. [2.]Southwest Research Institute, San Antonio, TX, United States.

303.07 **Ejecta Transfer within the Pluto System**
Simon Porter[1], William Grundy[1]
[1.]Lowell 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. Stern[1], Leslie A. Young[1], Harold A. Weaver[3], Cathy Olkin[1], Bonnie J. Buratti[4], John Spencer[1], Kimberly Ennico[5]
[1.]SwRI, Boulder, CO, United States. [2.]MIT, Cambridge, MA, United States. [3.]JHU-APL, Laurel, MD, United States. [4.]JPL, Pasadena, CA, United States. [5.]NASA-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 Mueller[1], Josh Emery[2], Andy Rivkin[3], David Trilling[4], Joe Hora[5], Marco Delbo'[6], Seiji Sugita[7], Sunao Hasegawa[8], Masateru Ishiguro[9], Young-Jun Choi[10], Michael Mommert[4]
[1.]SRON, Groningen, Netherlands. [2.]University of Tennessee, Knoxville, TN, United States. [3.]JHU / APL, Baltimore, MD, United States. [4.]NAU, Flagstaff, AZ, United States. [5.]Harvard-Smithsonian, Cambridge, MA, United States. [6.]Observatoire de la Côte d'Azur, Nice, France. [7.]University of Tokyo, Tokyo, Japan. [8.]JAXA, Sagamihara, Japan. [9.]Seoul National University, Seoul, Korea, Republic of.[10.]KASI, Daejeon, Korea, Republic of.

304.02 **The Size Distribution of Very Small Near Earth Objects As Measured by Warm Spitzer**
David E. Trilling[1], Joe Hora[2], Brian Burt[1, 3], Marco Delbo[4], Joshua Emery[5], Giovanni Fazio[2], Cesar Fuentes[1], Alan Harris[6], Michael Mueller[7], Michael Mommert[1, 6], Howard Smith[2]
[1.]Northern Arizona University, Flagstaff, AZ, United States. [2.]Harvard-Smithsonian Center for Astrophysics, Cambridge, MA, United States. [3.]Massachusetts Institute of Technology, Cambridge, MA, United States. [4.]Observatoire de la Cote d'Azur, Nice, France. [5.]University of Tennessee, Knoxvilla, TN, United States. [6.]German Aerospace Center (DLR), Berlin, Germany. [7.]Space Research Organization Netherlands (SRON), Groningen, Netherlands.

304.03 **Ultra-Slow Rotating Outer Main Belt and Trojan Asteroids: Search for Binaries**
Keith S. Noll[1], Erin L. Ryan[2, 1], William M. Grundy[3], Susan D. Benecchi[4]
[1.]NASA/ GSFC, Greenbelt, MD, United States. [2.]ORAU, Oak Ridge, TN, United States. [3.]Lowell Obs., Flagstaff, AZ, United States. [4.]CIW, DTM, Washington, DC, United States.

304.04 **Direct Detection of YORP Spin-up on Asteroid (25143) Itokawa and Implications for its Internal Structure**
Stephen Lowry[1], Paul R. Weissman[2], Samuel R. Duddy[1], Benjamin Rozitis[3], Alan Fitzsimmons[4], Simon F. Green[3], Michael D. Hicks[2], Colin Snodgrass[5], Stephen D. Wolters[2], Steven R. Chesley[2], Jana Pittichová[2], Pieter van Oers[6]
[1.]University of Kent, Canterbury, United Kingdom. [2.]Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States. [3.]The Open University, Milton Keynes, United Kingdom.[4.]Queens University Belfast, Belfast, United Kingdom. [5.]Max Planck Institute for Solar System Research, Katlenburg-Lindau, Germany. [6.]Isaac Newton Group of Telescopes, Santa Cruz de la Palma, Spain.

304.05 **New Asteroid Shape Models Derived from the Lowell Photometric Database**
Josef Durech[1], Josef Hanus[1], Radim Vanco[2], Dagmara Oszkiewicz[3], Edward Bowell[4]
[1.]Astronomical Institute, Charles University in Prague, Prague, Czech Republic. [2.]Czech National Team, Ujezd u Brna, Czech Republic. [3.]Adam Mickiewicz University, Poznan, Poland. [4.]Lowell Observatory, Flagstaff, AZ, United States.

304.06 **In Search of Fresh Material on Asteroid Pairs**
David Polishook[1], Nicholas Moskovitz[1], Richard P. Binzel[1], Francesca DeMeo[1], David Vokrouhlicky[2]
[1.]EAPS, MIT, Cambridge, MA, United States. [2.]Charles University, Prague, Czech Republic.

304.06 **In Search of Fresh Material on Asteroid Pairs**
David Polishook[1], Nicholas Moskovitz[1], Richard P. Binzel[1], Francesca DeMeo[1], David Vokrouhlicky[2]
[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 Hanus[1], Josef Durech[1], Miroslav Broz[1]
[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 Choi[2], Hong-Kyu Moon[2], Yong-Ik Byun[1], Noah Brosch[3], Murat Kaplan[4], Suleyman Kaynar[4], Omer Uysal[4], Eda Guzel[5], Raoul Behrend[6], Joh-Na Yoon[7], Stefano Mottola[8], Tobias C. Hinse[2], Zeki Eker[4], Jang-Hyun Park[2]
[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 Horst[1], Margaret A. Tolbert[1]
[1.]University of Colorado, Boulder, CO, United States.

305.02 **Revised tholin profile in the atmosphere of Titan**
Mao-Chang Liang[1], J. Kammer[2], X. Zhang[3], D. Shemansky[4], Y. Yung[2]
[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. West[1], Aida Ovanessian[1], Anthony Del Genio[2], Elizabeth P. Turtle[3], Jason Perry[4], Alfred NcEwen[4], Trina Ray[1], Mou Roy[1]
[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 Maltagliati[1], Sandrine Vinatier[1], Bruno Bezard[1], Christophe Sotin[2], Bruno Sicardy[1], Philip D. Nicholson[3], Matthew Hedman[3], Roger N. Clark[4], Robert H. Brown[5]
[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 Karkoschka[1], Caitlin Griffith[1], Chuck See[1]
[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 Vinatier[1], Bruno Bézard[1], Sébastien Lebonnois[4], Nick Teanby[2], Rich Achterberg[3], Pascal Rannou[5]
[1.]LESIA, Obs. de Paris-Meudon, Meudon, Cedex, France, France. [2.]School of Earth Sciences, University of Bristol, Bristol, United Kingdom. [3.]NASA/Goddard Space Flight Center, Greenbelt, MD, United States. [4.]Laboratoire de Météorologie Dynamique, UNiversité Paris [6.]Paris, France. [5.]Groupe 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. Westlake[1], Hunter Waite[2], Jared M. Bell[3], Rebecca Perryman[2]
[1.]John Hopkins Applied Physics Lab, Laurel, MD, United States. [2.]Southwest Research Institute, San Antonio, TX, United States. [3.]National Institute of Aerospace, Hampton, VA, United States.

305.08 **Seasonal Evolution of Titan's Atmospheric Polar Vortices**
Nicholas A. Teanby[1], Patrick G. Irwin[2], Conor A. Nixon[3], Remco de Kok[4], Sandrine Vinatier[5], Athena Coustenis[5], Elliot Sefton-Nash[6, 1], Simon B. Calcutt[2], F. M. Flasar[3]
[1.]School of Earth Sciences, University of Bristol, Bristol, United Kingdom. [2.]University of Oxford, Oxford, Oxfordshire, United Kingdom. [3.]NASA Goddard Space Flight Center, Greenbelt, MD, United States. [4.]SRON Netherlands Institute for Space Research, Utrecht, Netherlands. [5.]LESIA-Observatoire de Paris, Paris, France. [6.]University of California Los Angeles, Los Angeles, CA, United States.

305.09 **Long-term chemical composition and temperature variations on Titan**
Athena Coustenis[1], Georgios Bampasidis[1, 2], Richard Achterberg[3, 4], Panayotis Lavvas[5], Conor Nixon[3, 4], Donald E. Jennings[4], Nick Teanby[6], Flasar F. Michael[4], Glenn Orton[7], Sandrine Vinatier[1], Ronald C. Carlson[8]
[1.]LESIA, Observatoire de Paris, Meudon, France. [2.]Faculty of Phys. National & Kapodistrian University of Athens, Athens, Greece. [3.]Department of Astronomy, Univ. of Maryland, Maryland, MD, United States. [4.]NASA/Goddard Flight Center, Greenbelt, MD, United States. [5.]GSMA, Univ. Reims, Reims, France. [6.]School Earth Sci., Univ. Bristol, Bristol, United Kingdom. [7.]JPL, Caltech, Pasadena, CA, United States. [8.]IACS, 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 Johansen[1]
[1.]Lund 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]
[1.]Department of Astronomy, Boston University, Boston, MA, United States. [2.]Hubble 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

WED

308.01 **Titan's Spectacular Volte-Face**
Caitlin A. Griffith[1]
[1.]University 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 Yseboodt[1], Tim Van Hoolst[1]
[1.]Royal Observatory of Belgium, Brussels, Belgium.

309.02 **Effects of topography on the dune forming winds on Titan**
Erik J. Larson[1], Owen B. Toon[1], Andrew J. Friedson[2]
[1.]University of Colorado, Boulder, CO, United States. [2.]Jet Propulsion Laboratory, Pasadena, CA, United States.

309.03 **Evaporation of Liquid Hydrocarbon Mixtures on Titan**
Adrienn Luspay-Kuti[1], Vincent F. Chevrier[1], Edgard G. Rivera-Valentin[2], Sandeep Singh[1], Larry A. Roe[1], Amanda Wagner[1]
[1.]University of Arkansas, Fayetteville, AR, United States. [2.]Brown University, Providence, RI, United States.

309.04 **Surface energy budget from a Titan GCM with realistic radiative transfer**
Juan M. Lora[1], Joellen Russell[1], Jonathan Lunine[2]
[1.]University of Arizona, Tucson, AZ, United States. [2.]Cornell University, Ithaca, NY, United States.

309.05 **The Atmospheric Transmission and Surface Composition of Titan**
Roger N. Clark[1], N. Pearson[1], R. H. Brown[2], D. P. Cruikshank[3], J. Barnes[4], R. Jaumann[5], L. Soderblom[12], C. Griffith[2], P. Rannou[6], S. Rodriguez[7], S. Le Mouelic[8], J. Lunine[9], C. Sotin[10], K. H. Baines[10], B. J. Buratti[10], P. D. Nicholson[9], R. M. Nelson[11], K. Stephan[5]
[1.]US Geological Survey, Denver, CO, United States. [2.]U. Arizona, Tucson, AZ, United States. [3.]NASA Ames, Moffett Field, CA, United States. [4.]U. Idaho, Moscow, ID, United States. [5.]DLR, Berlin, Germany. [6.]Université Reims, Reims, France. [7.]U. Paris, Paris, France. [8.]U. Nantes, Nantes, France. [9.]Cornell U., Ithaca, NY, United States. [10.]JPL, Pasadena, CA, United States. [11.]PSI, Pasadena, CA, United States. [12.]US Geological Survey, Flagstaff, AZ, United States.

309.06 **Ion Composition in Titan's Exosphere from the Cassini Plasma Spectrometer**
Adam K. Woodson[1], Robert E. Johnson[1]
[1]University 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 Upton[3], Michel Nuevo[1, 4], Jack L. Beauchamp[3], Farid Salama[1]
[1]NASA Ames Research Center, Moffett Field, CA, United States. [2]Bay Area Environmental Research Institute, Sonoma, CA, United States. [3]Noyes Laboratory of Chemical Physics and the Beckman Institute - California Institute of Technology, Pasadena, CA, United States. [4]SETI Institute, Mountain View, CA, United States.

309.08 **The North South Asymmetry in Titan's Haze Through Time at Equinox**
Corbin J. Hennen[1], Jason W. Barnes[1], Ralph D. Lorenz[2], Robert H. Brown[3], Christophe Sotin[4], Bonnie J. Buratti[4], Kevin H. Baines[4], Roger N. Clark[5], Philip D. Nicholson[6]
[1]Department of Physics, University of Idaho, Moscow, ID, United States. [2]Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States. [3]Department of Planetary Sciences, University of Arizona, Tucson, AZ, United States. [4]Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States. [5]United States Geological Survey, Denver, CO, United States. [6]Department of Astronomy, Cornell University, Ithaca, NY, United States.

309.09 **New Results on Titan's Atmosphere and Surface from Huygens Probe Measurements**
Ralph Lorenz[1]
[1]JHU/APL, Laurel, MD, United States.

309.10 **Titan 2D: Understanding Titan's Seasonal Atmospheric Cycles**
Michael Wong[1], Xi Zhang[2], Cheng Li[1], Renyu Hu[3], Run-Lie Shia[1], Claire Newman[4], Ingo Müller-Wodarg[5], Yuk Yung[1]
[1]California Institute of Technology, Pasadena, CA, United States. [2]University of Arizona, Tuscon, AZ, United States. [3]Massachusetts Institute of Technology, Cambridge, MA, United States. [4]Ashima Research, Pasadena, CA, United States. [5]Imperial 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. Pasachoff[1], Bryce A. Babcock[1], Allen B. Davis[1], Shubhanga Pandey[1], Muzhou Lu[1], Zeeve Rogosinski[1, 2], Michael J. Person[3], Amanda S. Bosh[3], Amanda M. Zangari[3, 5], Carlos A. Zuluaga[3], Amanda A. S. Gulbis[3, 4], Orlando Naranjo[6], Giuliat Navas[6], Libardo Zerpa[6], Jorsely Villarreal[6], Patricio Rojo[7], Francisco Förster[7], Elise Servajean[7]
[1]Williams College, Williamstown, MA, United States. [2]Wesleyan University, Middletown, CT, United States. [3]MIT, Cambridge, MA, United States. [4]SAAO, Cape Town, South Africa. [5]SwRI, Boulder, CO, United States. [6]U de Los Andes, Mérida, Venezuela, Bolivarian Republic of. [7]U. Chile, Santiago, Chile.

310.02 **Pluto: Global Modeling of 3-D Atmosphere-Surface Interactions**
Timothy I. Michaels[1]
[1]SETI Institute, Mountain View, CA, United States.

310.03 **A peculiar stable region around Pluto**
Rafael Sfair[1], Silvia Maria Giuliatti Winter[1], Othon C. Winter[1], Ernesto Vieira Neto[1]
[1.]UNESP - FEG, Guaratinguetá, SP, Brazil, Brazil.

310.04 **Longitudinal Variation of Ethane Ice on the Surface of Pluto**
Bryan J. Holler[1], Catherine B. Olkin[2], Leslie A. Young[2], William M. Grundy[3], Fran Bagenal[1]
[1.]Laboratory for Atmospheric and Space Physics, University of Colorado, Boulder, CO, United States. [2.]Southwest Research Institute, Boulder, CO, United States. [3.]Lowell Observatory, Flagstaff, AZ, United States.

310.05 **A Database of Optical Constants for Ices and Non-Ices Expected on Pluto and its Satellites**
Jake Olkin[1]
[1.]Niwot High School, Niwot, CO, United States.

310.06 **Mass Determination of Pluto and Charon from New Horizon REX Radio Science Observations**
Martin Paetzold[1], Thomas P. Andert[2], G. Leonard Tyler[3], Michael K. Bird[1, 3], David P. Hinson[3], Ivan R. Linscott[3]
[1.]Rheinisches Institut für Umweltforschung, Abteilung Planetenforschung (RIU-PF), an der Universität zu Köln, Cologne, Germany. [2.]Institut für Raumfahrttechnik und Weltraumnutzung, Universität der Bundeswehr München, Neubiberg, Germany. [3.]Department of Electrical Engineering, Stanford University, Stanford, CA, United States.

310.07 **Atmospheric Escape from the Pluto/Charon System: Monte Carlo Simulations**
Robert E. Johnson[1], Orenthal J. Tucker[2], Leslie A. Young[3]
[1.]Univ. of Virginia, Charlottesville, VA, United States. [2.]University of Michigan, Ann Arbor, MI, United States. [3.]Southwest Research Institue, Boulder, CO, United States.

310.08 **Changes on Pluto's Surface Revealed with Long Timebase Photometry**
Erin George[1], Marc Buie[2]
[1.]University of Colorado at Boulder, Boulder, CO, United States. [2.]Southwest 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 Malaspina[1], Eberhard Gruen[1], Keith Drake[1]
[1.]LASP, Univ. of Colorado, Boulder, CO, United States. [2.]Aerospace Eng. Sci. Department, Univ. of Colorado, Boulder, CO, United States.

311.02 **Hypervelocity Dust Impacts in Space and the Laboratory**
Mihaly Horanyi[1]
[1.]Univ. 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'Brien[1], Eberhard Gruen[2], Zoltan Sternovsky[1], Mihaly Horanyi[1], Antal Juhasz[5], Moebius Eberhard[3], Ralf Srama[4]
[1.]University of Colorado , Boulder, CO, United States. [2.]Max Planck Institute for Nuclear Physics, Heidelberg, Germany. [3.]University of New Hampshire, Durham, NH, United States. [4.]University of Stuttgart, Stuttgart, Germany. [5.]KFKI Research Institute for Particle and Nuclear Physics, Budapest, Hungary.

311.04 **Cratering Studies in Thin Plastic Films**
Anthony Shu[1, 3], Sebastian Bugiel[4], Eberhard Gruen[3, 4], Mihaly Horanyi[2, 3], Tobin Munsat[1, 3], Ralf Srama[4, 5]
[1.]Univ. Colo. Boulder, Boulder, CO, United States. [2.]LASP, Boulder, CO, United States. [3.]CCLDAS, Boulder, CO, United States. [4.]MPI-K, Heidelberg, Germany. [5.]IRS, 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 Drake[1], Zoltan Sternovsky[1], Mihály Horányi[1], Sascha Kempf[1], Ralf Srama[2, 3]
[1.]University of Colorado, Boulder, CO, United States. [2.]Max-Planck-Institut für Kernphysik, Heidelberg, Germany. [3.]Institut für Raumfahrtsysteme, Stuttgart, Germany.

311.06 **Can Ring Dust Impacts Alter the Surfaces of the Mid-sized Saturnian Moons?**
Amara L. Graps[1], Anne Verbiscer[2], Paul Schenk[3]
[1.]Planetary Science Institute, Tucson, AZ, United States. [2.]Dept. of Astronomy, University of Virginia, Charlottesville, VA, United States. [3.]Lunar and Planetary Institute, Houston, TX, United States.

311.07 **Modeling Solar Wind Mass-Loading Due to Cometary Dust**
Anthony Rasca[1], Mihaly Horanyi[1]
[1.]Laboratory 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. Clarke[1], Jinhie Skarda[2], Chuck Higgins[3], Ted Jaeger[4], Kasu Imai[5], Francisco Reyes[6]
[1.]Naval Research Lab., Washington, DC, United States. [2.]Stanford University, Stanford, CA, United States. [3.]MTSU, Murfreesboro, TN, United States. [4.]APL, Laurel, MD, United States. [5.]Kochi National College of Technology, Kochi, Kochi, Japan. [6.]University of Florida, Gainesville, FL, United States.

312.02 **Infrared Emission Processes of Hydrocarbons in the Auroral Regions of Jupiter**
Sang J. Kim[1]
[1.]Kyunghee Univ., Yongin, .

312.03 **The ν4, ν9, ν10 and ν6+ν11 bands of 13CH3-12CH3 between 1245 and 1550 cm-1**
Linda R. Brown[1], Carlo di Lauro[2], Franca Lattanzi[2], Arlan W. Mantz[3], Mary Ann H. Smith[4]
[1.]Jet Propulsion Laboratory, Pasadena, CA, United States. [2.2]Universita di Napoli Federico, Naples, Italy. [3.3C]onnecticut College, New London, CA, United States. [4.]NASA 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. Tejfel[1], Vladimir D. Vdovichenko[1], Galina A. Kirienko[1], Galina A. Kharitonova [1]
[1.]Fessenkov Astrophysical Institute, Almaty, AB, Kazakhstan.

312.05 **Optical Ground-Based Spectra of Jupiter and Saturn: An Exploration of Giant Planet Chromophores**
Nancy J. Chanover[1], Amy A. Simon-Miller[2], Reggie L. Hudson[2], Mark J. Loeffler[2]
[1.]New Mexico State Univ., Las Cruces, NM, United States. [2.]NASA Goddard Space Flight Center, Greenbelt, MD, United States.

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

Csaba Palotai[1], Donald Korycansky[2], Joseph Harrington[1]
[1.]University of Central Florida, Orlando, FL, United States. [2.]University 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. Orton[1], Leigh N. Fletcher[2], F. Michael Flasar[3], Richard K. Achterberg[4], Padma A. Yanamandra-Fisher[5], Matthew Lewis[6], Takuya Fujiyoshi[7], Jordan Bell[8], John Christian[9], Sarah K. Brown[10]
[1.]JPL, Pasadena, CA, United States. [2.]University of Oxford, Oxford, United Kingdom. [3.]NASA Goddard Space Flight Center, Greenbelt, MD, United States. [4.]University of Maryland, College Park, MD, United States. [5.]Space Science Institute, Boulder, CO, United States. [6.]University of Chicago, Chicago, IL, United States. [7.]Subaru Telescope, Hilo, HI, United States. [8.]Brown University, Providence, RI, United States. [9.]California Institute of Technology, Pasadena, CA, United States. [10.]Georgia Institute of Technology, Atlanta, GA, United States.

WED

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

Alessandro Mura[1], Davide Grassi[1], Alberto Adriani[1]
[1.]IAPS, Rome, Italy.
Contributing teams: JIRAM Team

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

Thomas W. Momary[1], Kevin H. Baines[2], Robert H. Brown[3], Bonnie J. Buratti[1], Roger N. Clark[4], Philip D. Nicholson[5], Christophe Sotin[1]
[1.]Jet Propulsion Laboratory/CalTech, Pasadena, CA, United States. [2.]Space Science & Engineering Center, University of Wisconsin, Madison, WI, United States. [3.]University of Arizona, Tucson, AZ, United States. [4.]U. S. Geological Survey, Denver, CO, United States. [5.]Cornell 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. Blalock[1], Robert L. Draham[1, 2], Janelle A. Holmes[1, 3], Kunio M. Sayanagi[1]
[1.]Hampton University, Hampton, VA, United States. [2.]Juniata College, Huntingdon, PA, United States. [3.]Howard University, Washington, DC, United States.

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

Harold J. Trammell[1], Liming Li[1], Xun Jiang[1], Mark Smith[1], Ashwin Vasavada[2]
[1.]University of Houston, Houston, TX, United States. [2.]Jep Propulsion Lab, Pasadena , CA, United States.

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

Brigette E. Hesman[1, 2], Gordon L. Bjoraker[2], Richard K. Achterberg[1, 2], Donald E. Jennings[2], Paul N. Romani[2], Leigh N. Fletcher[3], Patrick G. Irwin[3]
[1.]Univ. Maryland, College Park, MD, United States. [2.]NASA GSFC, Greenbelt, MD, United States. [3.]University of Oxford, Oxford, United Kingdom.

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

Julianne I. Moses[1], Glenn S. Orton[2], Leigh N. Fletcher[3], Amy K. Mainzer[2], Dean C. Hines[4], Heidi B. Hammel[5], Javier Martin-Torres[6], Martin Burgdorf[7], Cecile Merlet[3], Michael R. Line[8], Andrew Poppe[9]
[1.]Space Science Institute, Boulder, CO, United States. [2.]JPL, Pasadena, CA, United States. [3.]U. Oxford, Oxford, United Kingdom. [4.]STSci, Baltimore, MD, United States. [5.]AURA, Washington, DC, United States. [6.]CSIC-INTA, Madrid, Spain. [7.]HE Space Operations, Bremen, Germany. [8.]UC Santa Cruz, Santa Cruz, CA, United States. [9.]UC Berkeley, Berkeley, CA, United States.

312.14 The origin of CO in the stratosphere of Uranus
Thibault Cavalié[1,2], Raphael Moreno[3], Emmanuel Lellouch[3], Paul Hartogh[4], Olivia Venot[5], Glenn S. Orton[6], Christopher Jarchow[4], Thérèse Encrenaz[3], Franck Selsis[1,2], Franck Hersant[1,2], Leigh N. Fletcher[7]
[1]Univ. Bordeaux, LAB, Floirac, France. [2]CNRS, LAB, Floirac, France. [3]LESIA, Obs. Paris, Meudon, France. [4]Max Planck Institut für Sonnensytemforschung, Katelnburg-Lindau, Germany. [5]Instituut voor Sterrenkunde, Katholieke Universiteit Leuven, Leuven, Belgium. [6]JPL, Pasadena, CA, United States. [7]Atmospheric, 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. Edgington[1], Sushil K. Atreya[2], Eric H. Wilson[3], Kevin H. Baines[1,4], Robert A. West[1], Gordon L. Bjoraker[5], Leigh N. Fletcher[6], Tom Momary[1]
[1]Jet Propulsion Laboratory/CalTech, Pasadena, CA, United States. [2]University of Michigan, Ann Arbor, MI, United States. [3]Space Enviroment Technologies, Los Angeles, CO, United States.[4]University of Wisconsin, Los Angeles, WI, United States. [5]NASA Goddard Space Flight Center, Greenbelt, MD, United States. [6]University of Oxford, Oxford, United Kingdom.

312.16 Atmospheric Variation on Saturn: From Voyager to Cassini
Liming Li[1], Richard Achterberg[2], Barney Conrath[3], Peter Gierasch[3], Mark Smith[1], Amy Simon-Miller[4], Conor Nixon[4], Glenn Orton[5], F. Flasar[4], Xun Jiang[1], Kevin Baines[5], Raul Morales-Juberias[6], Andrew Ingersoll[7], Ashwin Vasavada[5], Anthony Del Genio[8], Robert West[5], Shawn Ewald[7]
[1]University of Houston, Sugar Land, TX, United States. [2]University of Maryland, College Park, MD, United States. [3]Cornell University, Ithaca, NY, United States. [4]NASA/GSFC, New York, NY, United States. [5]Caltech/JPL, Pasadena, CA, United States. [6]New Mexico Institute of Mining and Technology, Socorro, NM, United States. [7]Caltech, Pasadena, CA, United States. [8]NASA/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-Fisher[1], Glenn S. Orton[2], Kevin H. Baines[3], Thomas W. Momary[2]
[1]Space Science Institute, Rancho Cucamonga, CA, United States. [2]CIT/JPL, Pasadena, CA, United States. [3]SSEC/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. Fry[1], Lawrence A. Sromovsky[1], Erich Karkoschka[2], Imke de Pater[3], Kathy A. Rages[4], Heidi B. Hammel[5]
[1]Space Science & Engineering Center, University of Wisconsin, Madison, WI, United States. [2]Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ, United States. [3]University of California, Berkeley, CA, United States. [4]SETI Institute, Mountain View, CA, United States. [5]AURA, Washington, DC, United States.

312.19 Clouds, Hazes, and Rings: Keck Observations of Uranus
Katherine R. de Kleer[1], Imke de Pater[1,2], Statia Luszcz-Cook[4], Mate Adamkovics[1], Heidi Hammel[3,5], Patrick Fry[6]
[1]UC Berkeley, Berkeley, CA, United States. [2]Delft Institute of Earth Observation and Space Systems, Delft, Netherlands. [3]Space Science Institute, Boulder, CO, United States. [4]American Museum of Natural History, New York, NY, United States. [5]Association of Universities for Research in Astronomy, Washington, D.C., DC, United States. [6]University of Wisconsin - Madison, Madison, WI, United States.

312.20 **Multi-wavelength Observations of Neptune's Atmosphere**
Imke de Pater[1], Leigh Fletcher[2], Statia Luszcz-Cook[3], David deBoer[1], Bryan Butler[4], Glenn Orton[5], Michael Sitko[6], Heidi Hammel[7]
[1.]UC, Berkeley, Berkeley, CA, United States. [2.]University of Oxford, Oxford, United Kingdom. [3.]American Museum of Natural History, New York, NY, United States. [4.]NRAO, Socorro, NM, United States.[5.]JPL, Pasadena, CA, United States. [6.]University of Cincinnati, Cincinnati, OH, United States. [7.]AURA, New York, NY, United States.

312.21 **Chemical Abundances in Neptune's Troposphere as Determined from Microwave Observations**
James Norwood[1], Mark Hofstadter[2]
[1.]New Mexico State University, Las Cruces, NM, United States. [2.]Jet Propulsion Laboratory, Pasadena, CA, United States.

312.22 **Atmospheric confinement of jet streams on Uranus and Neptune**
Yohai Kaspi[1], Adam P. Showman[2], William B. Hubbard[2], Oded Aharonson[1], Ravit Helled[3]
[1.]Earth and Planetary Sciences, Weizmann Institute of Science, Rehovot, Israel. [2.]University of Arizona, Tucson, AZ, United States. [3.]Tel Aviv University, Tel Aviv, Israel.

312.23 **Inhibition of Diffusive Convection in the Water Condensation Zone of the Ice Giants**
Andrew J. Friedson[1]
[1.]JPL, Pasadena, CA, United States.

312.24 **Dynamic coupling of magnetic fields, thermal emissions, and zonal flows in ice giant planets**
Krista M. Soderlund[1], Moritz H. Heimpel[2], Eric M. King[3], Jonathan M. Aurnou[4]
[1.]University of Texas Institute for Geophysics, Austin, TX, United States. [2.]University of Alberta , Edmonton, AB, Canada. [3.]University of California, Berkeley , Berkeley, CA, United States. [4.]University 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 Kagitani[1]
[1.]Planetary 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. Andert[1], Martin Pätzold[2], Bernd Häusler[1], Silvia Tellmann[2]
[1.]Institut für Raumfahrttechnik und Weltraumnutzung, Universität der Bundeswehr München, Munich, Germany. [2.]Rheinisches 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. Manning[1], Michael H. Wong[2], Heather B. Franz[3], Melissa Trainer[3], Charles A. Malespin[3], Eric Raaen[3], Paul R. Mahaffy[3], Sushil K. Atreya[2], John H. Jones[5], Robert O. Pepin[4], Rafael Navarro-Gonzalez[6], Toby Owen[7]
[1.]Concordia College, Moorhead, MN, United States. [2.]University of Michigan, Ann Arbor, MI, United States. [3.]Goddard Space Flight Center, Green Belt , MD, United States. [4.]University of Minnesota, Minneapolis, MN, United States. [5.]Johnson Space Center, Houston, TX, United States. [6.]Universidad Nacional Autonoma de Mexico , Mexico City, Mexico. [7.]University 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. Mahaffy[1], Heather Franz[1], Amy McAdam[1], Anna Brunner[1], Jen Eigenbrode[1], Jen Stern[1]
[1]NASA'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. Novak[1], Michael J. Mumma[2], Geronimo L. Villanueva[2, 3]
[1]Iona College, New Rochelle, NY, United States. [2]NASA-Goddard Space Flight Center, Greenbelt, MD, United States. [3]Catholic University, Washington, DC, United States.

313.05 **Surface Reflectance Modeling for Martian Cloud Optical Depth Retrievals from CRISM Multispectral Image Cubes**
David R. Klassen[1]
[1]Rowan Univ., Glassboro, NJ, United States.

313.06 **Timescales are short for the formation of water ice clouds on Mars**
Richard A. Urata[1], Robert M. Haberle[1], Melinda A. Kahre[1], Jeffery L. Hollingsworth[1]
[1]NASA Ames, Mountain View, CA, United States.

313.07 **Martian dust aerosols and clouds in the North Polar summer: size and sedimentation**
Mark T. Lemmon[1], Emily Mason[1]
[1]Texas AandM University, College Station, TX, United States.

313.08 **Martian dust aerosols in the North Polar summer: scattering properties and shape**
Emily Mason[1], Mark Lemmon[1]
[1]Texas A&M university, College Station, TX, United States.

313.09 **Mesoscale Modeling of Water and Clouds in the Northern Martian Summertime**
Daniel Tyler[1], Jeffrey R. Barnes[1]
[1]Oregon State University, Corvallis, OR, United States.

313.10 **The Effect of Limb Staring on Mars Climate Sounder Observations of Convective Instabilities**
Robert Edmonds[1], Jim Murphy[1], John Schofield[2], Nicholas Heavens[3]
[1]New Mexico State University, Las Cruces, NM, United States. [2]Jet Propulsion Laboratory, Pasadena, CA, United States. [3]Hampton 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. Kahre[1], Jeffery L. Hollingsworth[1], Robert M. Haberle[1], Richard A. Urata[2]
[1]NASA Ames Research Center, Moffett Field, CA, United States. [2]NASA 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. Bell[2]
[1]University of Virginia, Newport News, VA, United States. [2]National Institute of Aerospace, Hampton , VA, United States.

313.13 **Semi-Stationary Waves Masquerading as Stationary Waves in the Martian Atmosphere**
Tamara McDunn[1], David Kass[1], Dan McCleese[1], Armin Kleinboehl[1], John T. Schofield[1]
[1]Jet 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 Khayat[1], Geronimo L. Villanueva[2, 4], Michael J. Mumma[2], Timm E. Riesen[1, 3], Alan T. Tokunaga[1]
[1.]Institute for Astronomy, UH Manoa, Honolulu, HI, United States. [2.]NASA Goddard Spaceflight Center , Greenbelt, MD, United States. [3.]NASA Astrobilology 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 Bhattacharyya[1], John T. Clarke[1], Jean-Loup Bertaux[2], Jean-Yves Chaufray[2], Jordan Montgomery[1], Carl Schmidt[3]
[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 Brain[1], Sebastian Fischer[2], Keita Linden[1], Demet Ulusen[3], Jasper Halekas[4]
[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.

WED

313.17 Unxpected Time-Variability of Martian Hydrogen Loss
Michael S. Chaffin[1], Jean Yves-Chaufray[2], Ian Stewart[1], Franck Montmessin[2], Nick Schneider[1]
[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. Morrison[1], Roger Yelle[1]
[1.]Univ. of Arizona, Tucson, AZ, United States.

313.19 Hot Carbon Corona in Mars' Upper Thermosphere and Exosphere
Yuni Lee[1], Michael Combi[1], Valeriy Tenishev[1], Stephen Bougher[1]
[1.]University of Michigen, Ann Arbor, MI, United States.

313.20 Large-Scale, Synoptic-Period Weather Systems in Mars' Atmosphere
Jeffery L. Hollingsworth[1], Melinda Kahre[1]
[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 Wang[1], Janet G. Luhmann[1], Francois Leblanc[2], Xiaohua Fang[3], Ronan Modolo[2], Robert Lillis[1], Justin Deighan[3], Robert E. Johnson[4], Yingjuan Ma[5], Wing-Huen Ip[6]
[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. Fallows[1], Gabriel Gonzalez[1], Paul Withers[1], Zachary Girazian[1]
[1.]Boston Univ., Boston, MA, United States.

313.23 Hot Oxygen Transport Model for Martian Coronal Retrievals with MAVEN's IUVS Instrument
Justin Deighan[1], Ian Stewart[1], Nick Schneider[1]
[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. Fowler[1], Laila Andersson[1], Rickard N. Lundin[2], Rudy A. Frahm[3]
[1.]LASP/CU, Boulder, CO, United States. [2.]IRF-UMEA, Umea, Sweden. [3.]SwRI, San Antonio, TX, United States.

313.25 **Hot Oxygen in the Thermosphere of Mars**
Carol Carveth[1], John T. Clarke[1], Chaufray Jean-Yves[2], Jean-Loup Bertaux[2]
[1.]Boston Univ., Boston, MA, United States. [2.]LATMOS/IPSL, CNRS, Guyancourt, France.

313.26 **Investigating the asymmetry of Mars' South Polar Cap using the NASA Ames Mars General Circulation Model with a CO_2 cloud microphysics scheme**
Julie Dequaire[1], Melinda A. Kahre[2], Robert M. Haberle[2], Jefferey L. Hollingsworth[2]
[1.]Universities Space Research Association, Mountain View, CA, United States. [2.]NASA 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 Adams [2]
[1.]Pacific International Space Center for Exploration Systems, Hilo, HI, United States. [2]University 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. Thomas[3], Bruce A. Cantor[4]
[1.]Denver Museum of Nature & Science, Denver, CO, United States. [2.]Space Science Institute, Boulder, CO, United States. [3.]Cornell University, Ithaca, NY, United States. [4.]Malin Space Science Systems, San Diego, CA, United States.

400.02 **Characteristics and Origin of Martian Low-Aspect-Ratio Layered Ejecta (LARLE) Craters**
Nadine G. Barlow[1], Joseph M. Boyce[2]
[1.]Northern Arizona Univ., Flagstaff, AZ, United States. [2.]University 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 Clark[1], R. Gellert[2], S. Squyres[3], R. Arvidson[4], A. Yen[5], J. Rice[6]
[1.]Space Science Institute, Boulder, CO, United States. [2.]University of Guelph, Guelph, ON, Canada. [3.]Cornell Univ., Ithaca, NY, United States. [4.]Washington Univ., St. Louis, MO, United States. [5.]Jet Propulsion Laboratory, Pasadena, CA, United States. [6.]Planetary 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-Valentin[3], Raina V. Gough[1,4], Vincent F. Chevrier[5], Margaret A. Tolbert[1,4]
[1.]University of Colorado- CIRES, Boulder, CO, United States. [2.]University of Colorado- Dept. of Atmospheric and Oceanic Sciences, Boulder, CO, United States. [3.]Brown University - Dept of Geological Sciences, Providence, RI, United States. [4.]University of Colorado - Dept. of Chemistry, Boulder, CO, United States. [5.]University 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. Gerakines[1], Reggie L. Hudson[1]
[1.]NASA GSFC, Greenbelt, MD, United States.

400.06 **Analysis of chlorocarbon compounds identified in the SAM Investigation of the Mars Science Laboratory mission**
Caroline Freissinet[1], Paul Mahaffy[1], Daniel Glavin[1], Arnaud Buch[2], Anna Brunner[1], Jennifer Eigenbrode[1], Mildred Martin[1], Kristen Miller[5], Andrew Steele[4], Cyril Szopa[3]
[1.]NASA GSFC, Greenbelt, MD, United States. [2.]Ecole Centrale Paris, Chatenay Malabry, France. [3.]LATMOS, Guyancourt, France. [4.]Carnegie Institution of Washington, Washington DC, DC, United States.[5.]Massachusetts 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. Blaney[1], Samuel M. Clegg[2], Ryan Anderson[3], Roger Wiens[2], Sylvestre Maurice[4], Olvier Gasnault[4], Bruce Barraclough[5], Gilles Berger[4], John C. Bridges[6], Nathan Bridges[7], Ben Clark[8], M. D. Dyar[9], Lauren Edgar[10], Bethany Ehlmann[11], Watler Goetz[12], Linda Kah[13], Penny King[14, 15], Nina Lanza[2], Morton Madsen[16], S. LeMouelic[17], N. Mangold[17], P. Y. Meslin[4], Horton Newsom[18], Ann Ollila[18], Scott Rowland[19], Mariek Schmidt[20], Susanne Schröder[4], Robert Tokar[5]
[1.]JPL/Caltech, Pasaden, CA, United States. [2.]LANL, Los Alamos, NM, United States. [3.]USGS, Flagstaff, AZ, United States. [4.]IRAP, Toulouse, France. [5.]PSI, Tucson, AZ, United States. [6.]U. Leicester, Leicester, United Kingdom. [7.]APL, Laurel, MD, United States. [8.]SSI, Boulder, CO, United States. [9.]Mt Holyoke, South Hadley, MA, United States. [10.]ASU, Tempe, AZ, United States. [11.]Caltech, Pasdena, CA, United States. [12.]Max Plank, Katlenburg-Lindau, Germany. [13.]U. Tennessee , Knoxville, TN, United States. [14.]Australian National U., Sydney, NSW, Australia. [15.]U. of Guelph., Guelph, ON, Canada.[16.]U. Copenhagen, Copenhagen, Denmark. [17.]U. Nantes, Nantes, France. [18.]U. New Mexico, Albuquerque, NM, United States. [19.]U. Hawaii, Honolulu, HI, United States. [20.]Brock U., St Catharines, ON, Canada.
Contributing teams: MSL Science Team

400.08 **Composition and Physical Properties of Salt-Bearing Surfaces on Mars**
Timothy Glotch[1], Joshua Bandfield[3], Michael Wolff[2], Jessica Arnold[1], Congcong Che[1], Yang Liu[1]
[1.]Stony Brook University, Stony Brook, NY, United States. [2.]Space Science Institute, Milwaukee, WI, United States. [3.]Space 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]
[1.]Southwest Research Institute, Boulder, CO, United States. [2.]University of Arkansas, Fayetteville, AR, United States.

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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 Chodas[1], Robert Gershman[1]
[1.]JPL, Pasadena, CA, United States.

401.02 **The Pan-STARRS search for Near Earth Objects: recent progress and future plans**
Richard J. Wainscoat[1], Peter Veres[1], Bryce Bolin[1], Larry Denneau[1], Robert Jedicke[1], Marco Micheli[1], Serge Chastel[1]
[1.]Univ. of Hawaii, Honolulu, HI, United States.

401.03 **Minimoon Discovery with Ground-based Radar Facilities**
Bryce T. Bolin[1], Robert Jedicke[1], Mikael Granvik[2], Peter Brown[3], Monique Chyba[4], Ellen Howell[5], Mike Nolan[5], Geoff Patterson[4], Richard Wainscoat[1]
[1.]University of Hawaii, Institute for Astronomy, Honolulu, HI, United States. [2.]Department of Physics, University of Helsinki, Helsinki, Finland. [3.]University of Western Ontario, Physics & Astronomy Department, London, ON, Canada. [4.]University of Hawaii, Department of Mathematics, Honolulu, HI, United States. [5.]Arecibo 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 Szalay[1], Mihaly Horanyi[1]
[1.]University 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 Altobelli[3], Katherina Fiege[1], Jon K. Hillier[1], Sascha Kempf[4], Ralf Srama[2], Mario Trieloff[1]
[1.]Earth Science Institute, Heidelberg University, Heidelberg, Germany. [2.]Institut of Space Systems, Stuttgart University, Stuttgart, Germany. [3.]ESAC- ESA, Madrid, Spain. [4.]LASP, University of Colorado, Boulder, CO, United States.

402.03 **Understanding Asteroid Disruptions Using Very Young Dust Bands**
Ashley J. Espy Kehoe[1], Thomas J. Kehoe[2], Joshua E. Colwell[1], Stanley F. Dermott[3]
[1.]University of Central Florida, Orlando, FL, United States. [2.]Florida Space Institute, Orlando, FL, United States. [3.]Univ. of Florida, Gainesville, FL, United States.

402.04 **Dynamical Model for the Toroidal Source of the Sporadic Meteoroid Complex**
Petr Pokorny[1], David Vokrouhlicky[1, 2], Margaret Campbell-Brown[3], David Nesvorny[2], Peter Brown[3]
[1.]Astronomical Institute, Charles University Prague, Prague, Czech Republic. [2.]Department of Space Studies, Southwest Research Institute, Boulder, CO, United States. [3.]Department of Physics and Astronomy, University of Western Ontario, London, ON, Canada.

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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 Besserer[1], Antoine Rozel[2, 3], Gregor J. Golabek[3], Michael Kaplan[4], Thorsten W. Becker[4], Paul J. Tackley[3]
[1.]Department of Earth and Planetary Sciences,University of California, Santa Cruz , Santa Cruz, CA, United States. [2.]LET Laboratory of Experimental Tectonics, Dipartimento Scienze Geologiche, Università Roma TRE, Roma, Italy. [3.]Institute of Geophysics, Geophysical Fluid Dynamics, ETH Zurich, Zurich, Switzerland. [4.]Department 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 Sekine[1], Takazo Shibuya[2], Frank Postberg[3, 4], Hsiang-Wen Hsu[5], Katsuhiko Suzuki[2], Yuka Masaki[2], Tatsu Kuwatani[6], Shogo Tachibana[7]
[1.]Dept. Complexity Sci & Engr., The University of Tokyo, Kashiwa, Chiba, Japan. [2.] JAMSTEC, Yokosuka, Kanagawa, Japan. [3.]Universität Heidelberg, Heidelberg, Germany. [4.] Universität Stuttgart, Stuttgart, Germany. [5.]University of Colorado, Boulder, CO, United States. [6.]Tohoku Uniersity, Sendai, Japan. [7.]Hokkaido Uniersity, Sapporo, Japan.

403.03 **A New Estimate of the Power Emitted by Enceladus' Tiger Stripes**
John R. Spencer[1], Carly J. Howett[1], Anne J. Verbiscer[2], Terry A. Hurford[3], Marcia Segura[3], Daniel C. Spencer[4]
[1.]SwRI, Boulder, CO, United States. [2.]U. Virginia, Charlottesville, VA, United States. [3.] GSFC, Greenbelt, MD, United States. [4.]Kenilworth School, Kenilworth, Warwicks., United Kingdom.

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

Jay D. Goguen[1], Bonnie J. Buratti[1], Robert H. Brown[2], Roger N. Clark[3], Phillip D. Nicholson[4], Matthew M. Hedman[4], Christophe Sotin[1], Dale P. Cruikshank[5], Kevin H. Baines[1]

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

403.05 **Modeling the Temporal Variability of the Enceladus Plume**

Carolyn C. Porco[1], Francis Nimmo[2], Colin Mitchell[1]

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

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

Paul Ries[1], Michael Janssen[1]

[1.]Jet 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. Bosh[1], M. J. Person[1], S. E. Levine[2], C. A. Zuluaga[1], A. M. Zangari[1, 15], J. D. Ruprecht[1], R. Bowens-Rubin[1], T. C. Brothers[1], K. L. Berry[1], B. A. Babcock[3], J. M. Pasachoff[3], P. Rojo[4], E. Servajean[4], F. Förster[4], O. A. Naranjo[9], B. W. Taylor[14], E. W. Dunham[2], T. Oswalt[8], D. Batcheldor[8], M. Murison[5], T. Tilleman[5], H. C. Harris[5], L. P. Bright[2], G. Schaefer[7], S. Sallum[6], A. H. Midkiff[10], E. A. Mailhot[10], C. Miller[11], D. Morris[13], R. Wodaski[12], D. Bell[8], P. Bird[8], D. Fey[8], E. Geisert[8], D. Hastings[8], T. Mizusawa[8], P. Solenski[8], B. Watson[8]

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

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

Catherine B. Olkin[1], L. A. Young[1], D. Borncamp[1], A. Pickles[2], B. Sicardy[3], M. Assafin[4], F. B. Bianco[5], M. Buie[1], F. Colas[3], A. Dias de Oliveira[3, 10], M. Gillon[6], R. G. French[7], A. R. Gomes[4], E. Jehin[6], N. Morales[8], C. Opitom[6], J. L. Ortiz[8], A. Maury[9], M. Norbury[2], F. B. Ribas[10], R. Smith[11], L. H. Wasserman[12], E. F. Young[1], M. Zacharias[13], N. Zacharias[13]

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

404.03 **Atmospheric CO on Pluto: Limits from Millimeter-wave Spectroscopy**
Mark A. Gurwell[1], Bryan Butler[2], Arielle Moullet[3]
[1.]Harvard-Smithsonian Center For Astrophysics, Cambridge, MA, United States. [2.]NRAO, Soccoro, NM, United States. [3.]NRAO, Charlottesville, VA, United States.

404.04 **The Effect of Surface Albedo on Pluto's Atmospheric Circulation**
Angela M. Zalucha[1], Tim I. Michaels[1], Scot Rafkin[2]
[1.]SETI Institute , Mountain View, CA, United States. [2.]Southwest Research Institute, Boulder, CO, United States.

404.05 **Hybrid model of Pluto's full atmosphere**
Justin Erwin[1, 2], Robert E. Johnson[1], Darrell F. Strobel[3, 4], Xun Zhu[4]
[1.]University of Virginia, Charlottesville, VA, United States. [2.]Lunar and Planetary Lab, University of Arizona, Tucson, AZ, United States. [3.]The Johns Hopkins University, Baltimore, MD, United States.[4.]The 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

THU

405.01 **The Full Seasonal/Global Variation of Mars Ozone from MARCI 2006-2013 Daily Global Mapping Retrievals**
R. T. Clancy[1], Michael J. Wolff[1], Franck Lefevre[2], Michael C. Malin[3]
[1.]Space Science Inst., Boulder, CO, United States. [2.]Laboratoire Atmospheres Milieux Observations Spatiales, Paris, France. [3.]Malin 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. Franz[3], Charles A. Malespin[3], Melissa G. Trainer[3], Sushil K. Atreya[1], Paul R. Mahaffy[3], Jennifer C. Stern[3], Christopher P. McKay[4], Heidi L.K. Manning[5], John H. Jones[6], Tobias C. Owen[7], Rafael Navarro-González[8]
[1.]University of Michigan, Ann Arbor, MI, United States. [2.]University of California, Berkeley, CA, United States. [3.]NASA GSFC, Greenbelt, MD, United States. [4.]NASA ARC, Moffett Field, CA, United States.[5.]Concordia College, Moorhead, MN, United States. [6.]NASA JSC, Houston, TX, United States. [7.]University of Hawaii, Honolulu, HI, United States. [8.]UNAM, Mexico City, Mexico.
Contributing teams: the MSL Team

405.03 **Remotely Measured Boundary Layer Temperature and Carbon Dioxide Isotopes in Mars Atmosphere**
Theodor Kostiuk[1], Ramsey Smith[1], Tilak Hewagama[2], Timothy Livengood[3], John Annen[1]
[1.]NASA's GSFC, Greenbelt, MD, United States. [2.]UMD/GSFC, Greenbelt, MD, United States. [3.]CRESST/UMD/GSFC, Greenbelt, MD, United States.

405.04 **Martian Atmospheric Plumes: Behavior, Detectability and Plume Tracing**
Don Banfield[1], Michael Mischna[2], R. Ian Sykes[3], Richard Dissly[4]
[1.]Cornell Univ., Ithaca, NY, United States. [2.]JPL, Pasadena, CA, United States. [3.]Sage Management, Princeton, NJ, United States. [4.]Ball 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 Pilorget[1], Christopher S. Edwards[1], Bethany L. Ehlmann[1], François Forget[2], Ehouarn Millour[2]
[1.]Geological and Planetary Science, California Institute of Technology, Pasadena, CA, United States. [2.]Laboratoire de Météorologie Dynamique, Paris, France.

405.06 **Physical Properties of CO2 Frost Formed by Radiative Cooling in a Mars Simulation Chamber**
Stephen Wood[1], Adam Bruckner[1], Gary Hansen[1], Carin Cornwall[1], Noel Kimber[1], Federico Alvarez[1]
[1.]University of Washington, Seattle, WA, United States.

405.07 **Resolving The Great Drying of Mars: Sequence Stratigraphy of The Aeolis-Zephyria Trough**
Edwin Kite[1], Antoine Lucas[2], Oded Aharonson[1, 3]
[1.]Caltech, GPS Divsion, Pasadena, CA, United States. [2.]Universite Paris-Diderot – CEA-Saclay/Paris[7] , Paris, France. [3.]Weizmann 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 Fraeman[1], Scott Murchie[2], Roger Clark[3], Richard Morris[4], Raymond Arvidson[1], Andrew Rivkin[2], Faith Vilas[5]
[1.]Washington University in St. Louis, St Louis, MO, United States. [2.]Johns Hopkins Applied Physics Laboratory, Laurel, MD, United States. [3.]US Geological Survery, Denver, CO, United States. [4.]NASA Johnson Space Center, Houston, TX, United States. [5.]Planetary Science Insitute, Tucson, AZ, United States.

405.09 **The Martian Soil: A Planetary Gas Pump**
Caroline De Beule[1], Gerhard Wurm[1], Kelling Thorben[1], Markus Küpper[1], Tim Jankowski[1], Jens Teiser[1]
[1.]University Duisburg-Essen, Duisburg, Germany.

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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 Eviatar[1], Raymond Goldstein[2], Hunter Waite[2]
[1.]Tel Aviv University, Ramat Aviv, Israel. [2.]Southwest 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. Royer[1], Amanda R. Hendrix[2]
[1.]LASP, Boulder, CO, United States. [2.]PSI, Tucson, AZ, United States.

406.03 **Coherent Backscattering Effect in Icy Satellites: Model, Cassini VIMS, and Ground-Based Near-Infrared Spectra**
Karly M. Pitman[1], Ludmilla Kolokolova[2], Anne J. Verbiscer[3]
[1.]Planetary Science Institute, Tucson, AZ, United States. [2.]University of Maryland, College Park, MD, United States. [3.]University 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. Buratti[1], Paul A. Dalba[1], Roger N. Clark[2], Robert H. Brown[3], Joel A. Mosher[1], Kevin H. Baines[1], Phillip D. Nicholson[4]
[1.]JPL, Pasadena, CA, United States. [2.]USGS, Denver, CO, United States. [3.]Univ. Arizona, Tucson, AZ, United States. [4.]Cornell Univ., Ithaca, NY, United States.

406.05 **Rhea and Dione: Variations in Surface Thermal Properties**
Carly Howett[1], John Spencer[1], Verbiscer Anne[2]
[1.]SouthWest Research Institute, Boulder, CO, United States. [2.]University of Virginia, Charlottesville, VA, United States.

406.05 **Rhea and Dione: Variations in Surface Thermal Properties**
Carly Howett[1], John Spencer[1], Verbiscer Anne[2]
[1.]SouthWest Research Institute, Boulder, CO, United States. [2.]University of Virginia, Charlottesville, VA, United States.

406.06 **Crater Relaxation and Heat Flow on Dione and Tethys: Near Cousins of Enceladus?**
Oliver White[1], Paul Schenk[1], Andrew Dombard[2]
[1.]Universities Space Research Association, Houston, TX, United States. [2.]University of Illinois at Chicago, Chicago, IL, United States.

406.07 **The inner small satellites of Saturn: Their varied surfaces tell dynamic tales**
Peter C. Thomas[1], Paul Helfenstein[1], Joseph A. Burns[1]
[1.]Cornell Univ., Ithaca, NY, United States.

406.08 **Irregular Saturnian Moon Lightcurves from Cassini-ISS Observations: Update**
Tilmann Denk[1], Stefano Mottola[2]
[1.]Freie Universitat Berlin, Berlin, Germany. [2.]DLR, Berlin, Germany.

406.09 **Capture of irregular satellites due to gas drag from circumplanetary disk**
Ryo Suetsugu[1], Tetsuya Fujita[1], Keiji Ohtsuki[1, 2]
[1.]Department of Earth and Planetary Sciences, Kobe university, Kobe, Japan. [2.]University of Colorado, Boulder, CO, United States.

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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. Schleicher[1], Jason Begun[3], Michael S. Kelley[3], Michael F. A'Hearn[3], Karl Battams[4]
[1.]Lowell Observatory, Flagstaff, AZ, United States. [2.]JHU Applied Physics Laboratory, Laurel, MD, United States. [3.]University of Maryland, College Park, MD, United States. [4.]Naval Research Laboratory, Washington, DC, United States.

407.02 **Early pre-perihelion characterization of Comet C/2012 S1 (ISON)**
Jian-Yang Li[1], Michael S. Kelley[2], Tony L. Farnham[2], Michael F. A'Hearn[2], Matthew M. Knight[3], Harold A. Weaver[4], Max J. Mutchler[5], Philippe Lamy[6], Imre Toth[7]
[1.]Planetary Science Institute, Tucson, AZ, United States. [2.]University of Maryland, College Park, MD, United States. [3.]Lowell Observatory, Flagstaff, AZ, United States. [4.]Johns Hopkins University, Applied Physics Laboratory, Laurel, MD, United States. [5.]Space Telescope Science Institute, Baltimore, MD, United States. [6.]Laboratoire d'Astrophysique de Marseille, Marseille, France. [7.]Hungarian Academy of Sciences, Budapest, Hungary.

407.03 **Development of Activity in Comet C/2012 S1 ISON**
Karen J. Meech[1, 2], Bin Yang[1], Jacqueline V. Keane[1, 2], Megan Ansdell[1], Timm E. Riesen[1, 2], Jan Kleyna[1, 2], Henry Hsieh[1], Stefano Mottola[3], Ekkehard Kuehrt[3], Hsin-Fang Chiang[2], Bo Reipurth[1, 2], Giannantonio Milani[4], Erik Bryssinck[4], Peter Michaud[5], Travis Rector[6]
[1.]University of Hawaii, Honolulu, HI, United States. [2.]NASA Astrobiology Institute, Honolulu, HI, United States. [3.]DLR-German Aerospace Center, Berlin, Germany. [4.]CARA Project, IASF INAF, Roma, Italy. [5.]Gemini Observatory, Hilo, HI, United States. [6.]Univ. Alaska , Anchorage, AK, United States.

407.04 **The Early Inbound Activity of Comet ISON (C/2012 S1)**
Michael F. A'Hearn[1], Nicolas Biver[2], Dennis Bodewits[1], Tony L. Farnham[1], Lori M. Feaga[1], Paul D. Feldman[3], Matthew M. Knight[4], Laurence O'Rourke[5], David G. Schleicher[4], Harold A. Weaver[6]
[1.]University of Maryland, College Park, MD, United States. [2.]Observatoire de Paris, Meudon, France. [3.]The Johns Hopkins University, Baltimore, MD, United States. [4.] Lowell Observatory, Flagstaff, AZ, United States. [5.]European Space Astronomy Center, Villafranca, Spain. [6.]JHU 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. Schleicher[1], Matthew M. Knight[1], Allison N. Bair[1]
[1.]Lowell Obs., Flagstaff, AZ, United States.

407.06 **Observing Comet C/2012 S1 (ISON) With Spitzer**
Carey M. Lisse[1], Ron J. Vervack[1], Harold A. Weaver[1], James M. Bauer[2], Yanga R. Fernandez[3], Mike S. Kelley[4], Matthew M. Knight[5], Dean C. Hines[6], Jian-Yang Li[7], William T. Reach[8], Mike L. Sitko[9], Padma Yanamandra-Fisher[10], Karen J. Meech[11], John T. Rayner[11]
[1.]Johns Hopkins Univ., Laurel, MD, United States. [2.]JPL, Pasadena, CA, United States. [3.]UCF, Orlando, FL, United States. [4.]UMD, College Park, MD, United States. [5.]Lowell Observatory, Flagstaff, AZ, United States. [6.]STScI, Baltimore, MD, United States. [7.]PSI, Tucson, AZ, United States. [8.]USRA/SOFIA, Mountain View, CA, United States. [9.]University of Cincinnati, Cincinnati, OH, United States. [10.]SSI, Boulder, CO, United States. [11.]UH, 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. Feaga[1], Jessica M. Sunshine[1], Michael F. A'Hearn[1], Tony L. Farnham[1], Silvia Protopapa[1], Dennis D. Wellnitz[1], Kenneth P. Klaasen[2], Terry W. Himes[2]
[1.]Univ. of Maryland, College Park, MD, United States. [2.]JPL, Pasadena, CA, United States.

407.08 **Imaging Comets ISON and Garradd With the Deep Impact Flyby Spacecraft**
Tony Farnham[1], Dennis Bodewits[1], Lori M. Feaga[1], Michael F. A'Hearn[1], Jessica M. Sunshine[1], Dennis D. Wellnitz[1], Kenneth P. Klaasen[2], Terry W. Himes[2]
[1.]Univ. of Maryland, College Park, MD, United States. [2.]Jet Propulsion Laboratory, Pasadena, CA, United States.

407.09 **The evolving activity of the Dynamically Young Comet C/2009 P1 (Garradd)**
Dennis Bodewits[1], Tony L. Farnham[1], Mike F. A'Hearn[1], Lori M. Feaga[1], Adam McKay[2], Dave G. Schleicher[3], Jessica Sunshine[1]
[1.]University of Maryland, Washington, MD, United States. [2.]New Mexico State University, Las Cruces, NM, United States. [3.]Lowell 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. Atreya[1]
[1.]Univ. 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. Stone[1]
[1.]California 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 Schlichting[1]
[1.]MIT, 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 Taylor[1], Nicolas Altobelli[2], Fred Jansen[1, 2], Michael Kueppers[2], Gerhard Schwehm[1], Claudia Alexander[3], Maud Barthelemy[2], Bernhard Geiger[2], Richard Moissl[2], Claire Vallat[2], Bjoern Grieger[2], Albrecht Schmidt[2]
[1.]European Space Agency, ESTEC, Noordwijk, Netherlands. [2.]European Space Agency, ESAC, Madrid, Spain. [3.]NASA/JPL, Pasedena, CA, United States.

413.02 **A radiative transfer model for simulating VIRTIS/Rosetta molecular spectra**
Vincent Debout[1], Dominique Bockelee-Morvan[1], Vladimir Zhakarov[1]
[1.]Planetology, LESIA, Meudon, France.

413.03 **The VIS-IR mapping of 67P/Churyumov-Gerasimenko comet nucleus: the observation strategy of VIRTIS-M onboard Rosetta**
Fabrizio Capaccioni[1], Gianrico Filacchione[1], Sergio Fonte[1], Mauro Ciarniello[1], Andrea Raponi[1], Bernhard Geiger[2], Michael Kueppers[2], Claire Vaillat[1]
[1.]Istituto di Astrofisica e Planetologia Spaziali, Rome, Rome, Italy. [2.]ESAC, Madrid, Spain.

413.04 **Simulation of the radiance from a cometary nucleus coma. Application to Rosetta-VIRTIS observations of 67P Churyumov-Gerasimenko.**
Giovanna Rinaldi[1], Uwe Fink[2], Mauro Ciarniello[1], Gian Paolo Tozzi[3], Fabrizio Capaccioni[1], Gianrico Filacchione[1], Maria Blecka[4]
[1.]IAPS-INAF, Roma, Italy. [2.]Lunar and Planetary Laboratory, Tucson, AZ, United States. [3.] INAF, Osservatorio Astrofisico di Arcetri, Firenze, Italy. [4.4S]pace 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 Choukroun[1], Steve Keihm[1], Paul von Allmen[1], Seungwon Lee[1], Lucas Kamp[1], Samuel Gulkis[1], Mark Hofstadter[1], Michael Janssen[1]
[1.]Jet Propulsion Laboratory, Pasadena, CA, United States.

413.06 **Calibration of the Dust Impact Monitor DIM onboard Rosetta/Philae**
Harald Krueger[1], Alberto Flandes[2], Walter Arnold[3, 4], Hans-Herbert Fischer[5], Attila Hirn[6], Alexander Loose[1], Klaus J. Seidensticker[7], Matthias Sperl[8]
[1.]Planetary Research, Max-Planck-Institut fuer Sonnensystemforschung, Katlenburg-Lindau, Germany. [2.]Ciencias Especiales, Inst. de Geofisica, UNAM, Mexico, Mexico. [3.] Department of Materials, Saarland University, Saarbruecken, Germany. [4.1.]Phys. Institut, University of Göttingen, Goettingen, Germany. [5.]DLR, Space Operations, MUSC, Koeln, Germany. [6.]MTA Centre for Energy Research, Budapest, Hungary. [7.]DLR, Institute for Planetary Research, Berlin, Germany. [8.]DLR, Institut für Materialphysik im Weltraum, Koeln, Germany.

413.07 **Dust observations of comet 67P/Churyumov-Gerasimenko and comparison with ICES model.**
Gian-Paolo Tozzi[1], Maria Blecka[2], Fabrizio Capaccioni[3], Sara Faggi[1], Gianrico Filacchione[3], Uwe Fink[4], Giovanna Rinaldi[3]
[1.]INAF - Osservatorio Astrofisico di Arcetri, Firenze, Italy. [2.]Space Research Center PAS, Warsav, Poland. [3.]INAF - IAPS, Rome, Italy. [4.]LPL, Tucson, AZ, United States.

413.08 **Dust Properties of Three Oort Cloud Comets and Comet 67P/Churyumov-Gerasimenko**
Michael S. Kelley[1], David E. Harker[2], Charles E. Woodward[3], Michael L. Sikto[4], Ray W. Russell[5], Daryl L. Kim[5], Diane H. Wooden[6]
[1.]Univ. of Maryland, College Park, MD, United States. [2.]UCSD/CASS, San Diego, CA, United States. [3.]Univ. of Minnesota, Minneapolis, MN, United States. [4.]Space Science Inst., Boulder, CO, United States. [5.]The Aerospace Corp., Los Angeles, CA, United States. [6.]NASA Ames Research Center, Moffett Field, CA, United States.

413.09 **Ultraviolet Observations Of C/2012 S1 (ISON) By MAVEN**
Matteo Crismani[1], Nick Schneider[1], Ian Stewart[1], Michael Combi[2], Nicolas Fougere[2]
[1.]Laboratory for Atmospheric and Space Sciences, University of Colorado, Boulder, CO, United States. [2.]Department 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 Zubko[4], Karri Muinonen[4], Yuriy Shkuratov[5], Vadym Kaydash[5], Matthew M. Knight [6], Michael L. Sitko[7, 2], Carey M. Lisse[8], Max Mutchler[1], Derek M. Hammer[1]
[1.]Space Telescope Science Institute, Baltimore, MD, United States. [2.]Space Science Institute, Boulder, CO, United States. [3.]U.S. Army Research Laboratory, Adelphi, MD, United States. [4.]University of Helsinki, Helsinki, Finland. [5.]Kharkov National University, Kharkov, Ukraine. [6.]Lowell Observatory, Flagstaff, AZ, United States. [7.]University of Cincinnati, Cincinnati, OH, United States. [8.]Applied Physics Laboratory, Laurel, MD, United States.

413.11 A cometary update from the WISE mission
Rachel Stevenson[1], James M. Bauer[1,4], Emily A. Kramer[2], Amy K. Mainzer[1], Joseph R. Masiero[1], Tommy Grav[3], Yan R. Fernandez[2]
[1.]Jet Propulsion Laboratory, Pasadena, CA, United States. [2.]University of Central Florida, Orlando, FL, United States. [3.]Planetary Science Institute, Tucson, AZ, United States. [4.]Infrared 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. Kramer[1], Yanga R. Fernandez[1], James M. Bauer[2], Rachel A. Stevenson[2], Amy K. Mainzer[2], Tommy Grav[3], Joseph Masiero[2], Russell G. Walker[4], Carey M. Lisse[5]
[1.]University of Central Florida, Orlando, FL, United States. [2.]Jet Propulsion Laboratory, Pasadena, CA, United States. [3.]Planetary Science Institute, Tuscon, AZ, United States. [4.]Monterey Institute for Research in Astronomy, Monterey, CA, United States. [5.]Applied Physics Laboratory, Johns Hopkins University, Laurel, MD, United States.
Contributing teams: The WISE Team

413.13 Where are the small Kreutz-family members?
Quanzhi Ye[1], Paul Wiegert[1], Man-To Hui[2], Rainer Kracht[3]
[1.]The University of Western Ontario, London, ON, Canada. [2.], Guangzhou, China. [3.], Elmshorn, Germany.

413.14 Manifestations of Cometary Activity
Nalin H. Samarasinha[1], Beatrice Mueller[1], Tony L. Farnham[2]
[1.]Planetary Science Institute, Tucson, AZ, United States. [2.]University 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. Samarasinha[1], Lujendra Ojha[1], David G. Schleicher[3]
[1.]Planetary Science Institute, Tucson, AZ, United States. [2.]University of Arizona, Tucson, AZ, United States. [3.]Lowell Observatory, Flagstaff, AZ, United States.

413.16 PRE- AND POST-PERIHELION 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. Keane[4], Karen J. Meech[4], Michael J. Mumma[1,2]
[1.]Goddard Center for Astrobiology (GCA), Greenbelt, MD, United States. [2.]NASA - GSFC, Greenbelt, MD, United States. [3.]Catholic University of America, Washington, DC, United States. [4.]University 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], Adeline Gicquel[1,2], Martin A. Cordiner[1,2], Geronimo L. Villanueva[1,2], Anthony J. Remijan[3], Nicolas Biver[4], Dominique Bockelee-Morvan[4], Steven B. Charnley[1]
[1.]NASA Goddard Space Flight Center, Greenbelt, MD, United States. [2.]Catholic University of America, Washington, DC, United States. [3.]National Radio Astronomy Observatory, Charlottsville, VA, United States. [4.]Observatoire 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. Bonev[1], Michael J. Mumma[2], Geronimo L. Villanueva[1], Michael A. DiSanti[2], Hermann Böhnhardt[3], Lucas Paganini[1], Manuela Lippi[3], Erika L. Gibb[4]
[1.]Catholic University of America / Goddard Center for Astrobiology, Greenbelt, MD, United States. [2.]NASA Goddard Space Flight Center / Goddard Center for Astrobiology, Greenbelt, MD, United States. [3.]Max-Planck Institute for Solar System Research, Katlenburg-Lindau, N/A, Germany. [4.]University of Missori - St. Louis / Goddard Center for Astrobiology, Saint Louis, MO, United States.

413.19 Radio OH observations of Comet C/2011 L4 PANSTARRS
Amy J. Lovell[1], Ellen S. Howell[2]
[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. Mumma[1], Boncho P. Bonev[1, 2], Michael A. DiSanti[1], Erika L. Gibb[3], Karen Magee-Sauer[4], 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 Fougere[1], Michael R. Combi[1], Valeriy Tenishev[1]
[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. Milam[2], Anthony J. Remijan[3], Yo-Ling Chuang[4], Yi-Jehng Kuan[4, 5], Iain M. Coulson[6], Geronimo Villanueva[2], Steven B. Charnley[2], 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 Keane[1], Michael D. DiSanti[2], Boncho P. Bonev[3, 2], Lucas Paganini[2], Karen J. Meech[1], Michael J. Mumma[2], Geronimo L. Villanueva[2]
[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. Schambeau[1], Yanga R. Fernandez[1], Beatrice E. Mueller[2], Nalin H. Samarasinha[2], Laura M. Woodney[4], Carey M. Lisse[3]
[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 Woodney[1], Paul A. Abell[2], Yanga R. Fernandez[3], Beatrice E. Mueller[4], Nalin H. Samarasinha[4], Brian Chi[5], Cynthia Farr[1], Haley Redinger[5], Lindsey Schlueter[1]
[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 Kobayashi[1], Naoki Watanabe[2], Yoji Watanabe[1], Tomoya Fukushima[1], Hideyo Kawakita[1]
[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 Kawakita[1], Neil Dello Russo[2], Ronald J. J. Vervack[2], Hitomi Kobayashi[1], Michael A. DiSanti[3], Cyrielle Opitom[4], Emmanuel Jehin[4], Harold A. Weaver[2]
[1.]Kyoto Sangyo University, Kyoto, Kyoto, Japan. [2.]The Johns Hopkins University Applied Physics Laboratory, Laurel, MD, United States. [3.]Goddard Center for Astrobiology, NASA Goddard Space Flight Center, Greenbelt, MD, United States. [4.]F.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. Lederer[1], Elizabeth E. Jensen[2], Cierra Strojia[3], Douglas C. Smith[3], Lindsay P. Keller[1], Keiko Nakamura-Messenger[4], Eve L. Berger[1], Sean S. Lindsay[5], Diane H. Wooden[6], Mark J. Cintala[1], Michael E. Zolensky[1]
[1.]NASA Johnson Space Center, Houston, TX, United States. [2.]Planetary Science Institute, Houston, TX, United States. [3.]California State University SB, San Bernardino, CA, United States. [4.]JETS Jacobs Technology, Houston, TX, United States. [5.]University of Tennessee, Knoxville, TN, United States. [6.]NASA Ames Research Center, Moffett Field, CA, United States.

413.29 Micrometeorite Impact Effects on Comets and Asteroids: Peak Pressure versus Spectral Variation
Elizabeth Jensen[1], Susan M. Lederer[2], Cierra Strojia[3], Douglas C. Smith[3], Diane H. Wooden[4], Sean S. Lindsay[5], Lindsay P. Keller[2], Mark J. Cintala[2], Michael E. Zolensky[2]
[1.]Planetary Science Institute, Tucson, AZ, United States. [2.]NASA/Johnson Space Center, Houston, TX, United States. [3.]California State University SB, San Bernardino, CA, United States. [4.]NASA/Ames Research Center, Moffett Field, CA, United States. [5.]University of Tennessee, Knoxville, TN, United States.

413.30 Search for the Return of Activity in Active Asteroid 176P/LINEAR
Henry H. Hsieh[1, 2]
[1.]Academia Sinica Institute of Astronomy and Astrophysics, Taipei, Taiwan. [2.]University of Hawaii, Honolulu, HI, United States.

413.31 3200 PHAETHON: IMPLICATIONS OF A UNIQUE POLE SOLUTION AND THERMAL MODELING
Megan Ansdell[1], Karen J. Meech[1], James Bauer[1], Olivier R. Hainaut[1], Luke Dundon[1], Norbert Schorghofer[1]
[1.]University of Hawaii, Institute for Astronomy, Honolulu, HI, United States.

413.32 A Physical Model of Phaethon, a Near-Sun Object
Daniel C. Boice[1], Johannes Benkhoff[2], Walter F. Huebner[1]
[1.]Southwest Research Inst., San Antonio, TX, United States. [2.]ESA/ESTEC, Noordwijk, Netherlands.

413.33 Up a Cliff: Further Evidence of Scarp as Jet Source Area on Comet 9P/Tempel 1
Jordan Steckloff[1], Jay Melosh[1]
[1.]Purdue, 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 Volk[1], Renu Malhotra[2]
[1.]The University of British Columbia, Vancouver, BC, Canada. [2.]The 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 Gladman[2], Nathan Kaib[4], J. J. Kavelaars[3], Jean-Marc Petit[5]
[1.]University of Victoria, Victoria, BC, Canada. [2.]University of British Columbia, Vancouver, BC, Canada. [3.]National Research Council of Canada, Victoria, BC, Canada. [4.]Canadian Institute for Theoretical Astrophysics, Toronto, ON, Canada. [5.]Institut UTINAM, Besançon, Franche-Comté, France.

414.03 **Color Distribution of excited TNOs in HST's Frontier Fields**
Cesar Fuentes[1], David Trilling[1], Darin Ragozzine[2], Matthew Holman[3], Gary Bernstein[4], Paulo Penteado[1]
[1.]Northern Arizona University, Flagstaff, AZ, United States. [2.]University of Florida, Gainesville, FL, United States. [3.]Smithsonian Institution Astrophysical Observatory, Cambridge, MA, United States.[4.]University of Pennsylvania, Philadelphia, PA, United States.

414.04 **Rotational variability in medium and large sized TNOs.**
Vania Lorenzi[1], Noemí Pinilla-Alonso[2], Javier Licandro[3], Joshua P. Emery[2], Cristina M. Dalle Ore[4, 5]
[1.]Fundación Galileo Galilei - INAF, Breña Baja, Santa Cruz de Tenerife, Spain. [2.]University of Tennessee, Knoxville, TN, United States. [3.]Instituto Astrofísico de Canarias, IAC, La Laguna, Santa Cruz de Tenerife, Spain. [4.]Carl Sagan Center, SETI Institute, Mountain View, CA, United States. [5.]NASA Ames Research Center, Moffett Field, CA, United States.

414.05 **Preliminary Results On The Surface Composition Of Centaurs From IRAC/ Spitzer Photometry**
Noemi Pinilla-Alonso[1], Joshua P. Emery[1], David Trilling[2], Dale P. Cruikshank[3], Yanga Fernandez[4], Cristina M. Dalle Ore[5, 3], John A. Stansberry[6]
[1.]Department of Earth and Planetary Sciences, University of Tennessee, Knoxville, TN, United States. [2.]Northern Arizona University, Flagstaff, AZ, United States. [3.]NASA Ames Research Center, Moffett Field, CA, United States. [4.]University of Central Florida, Orlando, FL, United States. [5.]Carl Sagan Center, SETI Institute, Mountain View, CA, United States. [6.] Space Telescope Science Institute, Baltimore, MD, United States.

414.06 **New Scattered Disk Object and Centaur Colors**
Melissa Brucker[1], Patrick Wilcox[1], John Stansberry[2, 3]
[1.]Univ. of Nebraska - Lincoln, Lincoln, NE, United States. [2.]Steward Observatory, Tucson, AZ, United States. [3.]Space Telescope Science Institute, Baltimore, MD, United States.

414.07 **29 November 2011 Stellar Occultation by 2060 Chiron: Symmetric Jet-like Features**
Jessica D. Ruprecht[1], Amanda S. Bosh[1], Michael J. Person[1], Federica B. Bianco[2, 3], Benjamin J. Fulton[5, 3], Amanda A. S. Gulbis[1, 4], Schelte J. Bus[5], Amanda M. Zangari[1, 6]
[1.]MIT, Cambridge, MA, United States. [2.]New York University, New York, NY, United States. [3.] Las Cumbres Global Telescope Network, Inc., Goleta, CA, United States. [4.]The Southern African Large Telescope, Observatory, South Africa. [5.]University of Hawaii, Honolulu, HI, United States. [6.]SwRI, Boulder, CO, United States.

414.08 **Status of the Transneptunian Automated Occultation Survey (TAOS II)**
Matthew Lehner[1, 2], Shiang-Yu Wang[1], Paul Ho[1], Zhi-Wei Zhang[1], Kem Cook[1], Wei-Ling Yen[1], Mauricio Reyes-Ruiz[3], David Hiriart[3], Michael Richer[3], Charles Alcock[4], Andrew Szentgyorgyi[4], John Geary[4], Tim Norton[4], Gabor Furesz[4]
[1.]Academia Sinica Institute of Astronomy and Astrophysics, Taipei, Taiwan. [2.]University of Pennsylvania, Philadelphia, PA, United States. [3.]Universidad Nacional Autónoma de México, Ensenada, BC, Mexico. [4.]Harvard Smithsonian Centor for Astrophysics, Cambridge, MA, United States.

414.09 **Probing The Outer Solar System Small Bodies With Stellar Occultations**
Lucie Maquet[1], Françoise Roques[1], Alain Doressoundiram[1], Chih-Yuan Liu[1], Hsiang-Kuan Chang[2], Shih I. Chun[3]
[1.]LESIA/Observatoire de Paris, Meudon, Paris, France. [2.]National Tsing Hua University, Taiwan, Taiwan. [3.]GEPI/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 Gladman[3], Jean-Marc Petit[4]
[1.]NRC-Herzberg, Victoria, BC, Canada. [2.]University of Victoria, Victoria, BC, Canada. [3.] University of British Columbia, Vancouver, BC, Canada. [4.]Institut UTINAM - UMR CNRS [6213.]Observatoire de Besancon, Besancon, France.
Contributing teams: the OSSOS Collaboration

414.11 **An Unusually Shaped Haumea Family Member**
Pedro Lacerda[1]
[1.]Queen's University Belfast, Belfast, United Kingdom.

414.12 **Involving Citizen Scientists to Measure Trans-Neptunian Objects**
John Keller[1], Marc W. Buie[2]
[1.]California Polytechnic State University, San Luis Obispo, CA, United States. [2.]Southwest 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. Quarles[1], Jack Lissauer[1]
[1.]NASA Ames Research Center, Moffett Field, CA, United States.

415.02 **Formation of multiple-satellite systems from circumplanetary particle disks**
Ryuki Hyodo[1], Keiji Ohtsuki[1], Takaaki Takeda[2]
[1.]Kobe University, Kobe, Japan. [2.]National Astronomical Observatory of Japan, Mitaka, Tokyo, Japan.

415.03 **The Evolution and Survival of Gaseous Protoplanets Embedded in a Disk**
Ravit Helled[1], Allona Vazan[1]
[1.]Tel-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 Dib[1], Olivier Mousis[1], Jean-Marc Petit[1]
[1.]Institut 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-Ruiz[1], Hector Aceves[1], Carlos E. Chavez[2], Santiago Torres[1]
[1.]Instituto de Astronomia, UNAM, Ensenada, Baja California, Mexico. [2.]Facultad de Ingenieria Mecanica y Electrica, UANL, Monterrey, Nuevo Leon, Mexico.

415.06 **Vortex Formation in Vertically Stratified Protoplanetary Disks**
Glen R. Stewart[1]
[1.]Univ. of Colorado, Boulder, CO, United States.

415.07 **Primary Accretion and Turbulent Cascades: Scale-Dependence of Particle Concentration Multiplier Probability Distribution Functions**
Jeffrey N. Cuzzi[1], Brian Weston[2], Karim Shariff[1]
[1.]NASA Ames Research Center, Moffett Field, CA, United States. [2.]University of California, Davis, CA, United States.

415.08 **Building a Planetesimal: low-velocity collisions between centimeter sized proto-planetesimals**
Akbar Whizin[1], Joshua E. Colwell[1], Mark C. Lewis[2]
[1.]University of Central Florida, Orlando, FL, United States. [2.]Trinity College, San Antonio, TX, United States.

415.08 **Building a Planetesimal: low-velocity collisions between centimeter sized proto-planetesimals**
Akbar Whizin[1], Joshua E. Colwell[1], Mark C. Lewis[2]
[1.]University of Central Florida, Orlando, FL, United States. [2.]Trinity College, San Antonio, TX, United States.

415.09 **Dynamics of Colliding Clusters of Millimeter Sized Adhesive Particles**
Mark C. Lewis[1], Akbar Whizin[2], Josh E. Colwell[2]
[1.]Trinity University, San Antonio, TX, United States. [2.]University of Central Florida, Orlando, TX, United States.

415.10 **Fast Formation of Giant Planets by Photophoresis**
Jens Teiser[1], Sarah E. Dodson-Robinson[2]
[1.]University Duisburg-Essen, Duisburg, Germany. [2.]University of Texas at Austin, Austin, TX, United States.

415.11 **Promises and Problems of Pebble Accretion**
Katherine A. Kretke[1], Harold F. Levison[1]
[1.]Southwest Research Institute, Boulder, CO, United States.

415.12 **Water and OH in Protoplanetary Disks Irradiated by FUV and X-rays**
Mate Adamkovics[1], Alfred E. Glassgold[1], Joan R. Najita[2]
[1.]University of California, Berkeley, Berkeley, CA, United States. [2.]National Optical Astronomy Observatory, Tucson, AZ, United States.

415.13 **N-Body Simulations of Low-Velocity Impact Experiments**
Madison Stemm[1], Josh Colwell[1], Mark C. Lewis[2], Damien Denis[3], Tony Ordoñez[3]
[1.]University of Central Florida, Orlando, FL, United States. [2.]Trinity University, San Antonio, TX, United States. [3.]University 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 Charnoz[1], Aurélien Crida[2]
[1.]Université Paris Diderot / CEA Saclay, Paris , France. [2.]Observatoire 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. Howell[1], Jay D. Goguen[2], John R. Spencer[3]
[1.]Univ. of Wyoming, Laramie, WY, United States. [2.]JPL, Pasadena, CA, United States. [3.]SwRI, Boulder, CO, United States.

416.02 **Direct Monte Carlo Simulations of Gas Flow from Enceladus' Nozzle-like Vents**
Orenthal Tucker[1], Michael R. Combi[1], Valeriy Tenishev[1]
[1.]University of Michigan, Ann Arbor, MI, United States.

416.03 **The Source of CO_2 Ice on Enceladus' Surface**
Dennis L. Matson[1], Ashley G. Davies[1], Torrence V. Johnson[1], Julie C. Castillo-Rogez[1], Jonathan I. Lunine[2]
[1.]Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States. [2.]Department of Astronomy, Cornell University, Ithaca, NY, United States.

416.04 **Silica nanoparticles as an evidence of hydrothermal activities at Enceladus**
Hsiang-Wen Hsu[1], Frank Postberg[2], Yasuhito Sekine[3], Sascha Kempf[1], Antal Juhasz[4], Mihaly Horanyi[1]
[1.]LASP, Uni. of Colorado Boulder, Boulder, CO, United States. [2.]Uni. of Stuttgart, Stuttgart, Germany. [3.]Tokyo Uni., Tokyo, Japan. [4.]KFKI Institute, Budapest, Hungary.

416.05 **Enceladus Close Up: New Details Recovered from Cassini ISS Boresight-Drag Images**
Paul Helfenstein[1], Peter C. Thomas[1], Joseph Veverka[1]
[1.]Cornell University, Ithaca, NY, United States.

416.06 **Modeling a close-up observation of Enceladus by Cassin/VIIMS with layered water ice**
Gary B. Hansen[1], Katrin Stephan[2]
[1.]Univ. of Washington, Seattle, WA, United States. [2.]German 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 Moullet[2], Mark Gurwell[3]
[1.]University of Montana, Missoula, MT, United States. [2.]National Radio Astronomy Observatory, Charlottesville, VA, United States. [3.]Harvard-Smithsonian CfA, Cambridge, MA, United States.

417.02 **Photometric Properties of Thermally Anomalous Terrain on Icy Saturnian Satellites**
Andrew Annex[1], Anne J. Verbiscer[1], Paul Helfenstein[2], Carly Howett[3], Paul Schenk[4]
[1.]The University of Virginia, Charlottesville, VA, United States. [2.]Cornell University, Ithaca, NY, United States. [3.]Southwest Research Institute, Boulder, CO, United States. [4.]Lunar and Planetary Institute, Houston, TX, United States.

417.03 **Cassini CIRS characterization of icy moon surface composition**
Cindy L. Young[1], James J. Wray[1], John R. Spencer[2], Roger N. Clark[3], Kevin P. Hand[4]
[1.]Georgia Institute of Technology, Atlanta, GA, United States. [2.]Southwest Research Institute, Boulder, CO, United States. [3.]U.S. Geological Survey, Denver, CO, United States. [4.] Jet Propulsion Laboratory, Pasadena, CA, United States.

417.04 **Hydrocarbons and other organic materials on Iapetus: Revised analysis**
Dale P. Cruikshank[1], Cristina M. Dalle Ore[1, 2], Yvonne J. Pendleton[1], Roger N. Clark[3]
[1.]NASA Ames Research Center, Moffett Field, CA, United States. [2.]SETI Institute, Mtn. View, CA, United States. [3.]USGS, Denver, CO, United States.

417.05 **Looking for Dione's Volatiles with Cassini's Ultraviolet Imaging Spectrograph**
Candice Hansen[1], Amanda Hendrix[1], Larry Esposito[2]
[1.]PSI, Tucson, AZ, United States. [2.]University of Colorado, Boulder, CO, United States.

417.06 **Geologic Evolution of Saturn's Icy Moon Tethys**
Roland Wagner[1], Katrin Stephan[1], Nico Schmedemann[2], Thomas Roatsch[1], Elke Kersten[1], Gerhard Neukum[2], Carolyn C. Porco[3]
[1.]DLR, Institute of Planetary Research, Berlin, Germany. [2.]Institute of Geosciences, Freie Universitaet, Berlin, Germany. [3.]Space Science Institute, Boulder, CO, United States.

417.07 **Comparison between Dione' and Enceladus' terrain units**
Francesca Scipioni[1], Federico Tosi[1], Katrin Stephan[2], Gianrico Filacchione[1], Fabrizio Capaccioni[1], Priscilla Cerroni[1]
[1.]INAF-IAPS, Rome, Italy. [2.]DLR, Berlin, Germany.

417.08 **Can Spatial Statistics Provide Another Approach to Understanding Impact Crater Saturation Equilibrium?**
Michelle Kirchoff[1]
[1.]*Southwest Research Institute, Boulder, CO, United States.*

417.09 **Catastrophic Collisions of Icy Satellites**
Donald Korycansky[1], Naor Movshovitz[1]
[1.]*University 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. Spencer[3], Constantine Tsang[3], Rosaly Lopes[4]
[1.]*Planetary Science Institute, Tucson, AZ, United States.* [2.]*University of Redlands, Redlands, CA, United States.* [3.]*Southwest Research Institute, Boulder, CO, United States.* [4.]*Jet Propulsion Lab, Pasadena, CA, United States.*

418.02 **Constraining Diameters of Ash Particles in Io's Pele Plume by DSMC Simulation**
William McDoniel[1], David B. Goldstein[1], Philip L. Varghese[1], Laurence M. Trafton[1]
[1.]*The University of Texas at Austin, Austin, TX, United States.*

418.03 **Simulations of Global Flows in Io's Rarefied Atmosphere**
William A. Hoey[1], David B. Goldstein[1], Philip L. Varghese[1], Laurence M. Trafton[1], Andrew C. Walker[2]
[1.]*ASE, The University of Texas at Austin, Austin, TX, United States.* [2.]*Los Alamos National Laboratory, Los Alamos, NM, United States.*

418.04 **Europa's Atmosphere: Production & Loss**
Fran Bagenal[1], Tim Cassidy[1], Vincent Dols[1], Frank Crary[1]
[1.]*Univ. 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 Arp[3], Ted Roush[4]
[1.]*Jet Propulsion Laboratory, Pasadena, CA, United States.* [2.]*University of Maryland, College Park, MD, United States.* [3.]*NIST, Gaithersburg, MD, United States.* [4.]*NASA Ames Research Center, Moffett Field, CA, United States.* [5.]*California Institute of Technology, Pasadena, CA, United States.*

418.06 **The Gravitational Fields of the Galilean Satellites -- Revisited**
Robert A. Jacobson[1]
[1.]*Jet Propulsion Laboratory, Pasadena, CA, United States.*

418.07 **Science of the Europa Clipper Mission Concept**
Robert T. Pappalardo[1], David Senske[1], Louise Prockter[2], Brian Paczkowski[1], Steve Vance[1], Wes Patterson[2], Barry Goldstein[1], Tom Magner[2], Brian Cooke[1]
[1.]*Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States.* [2.]*Johns 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. Waite[1], Tim Brockwell[1], Melissa A. McGrath[2], William B. McKinnon[3], Danielle Wyrick[1], Olivier Mousis[4], Brian Magee[1]
[1.]*Southwest Research Institute, San Antonio, TX, United States.* [2.]*NASA Marshall Space Flight Center, Huntsville, AL, United States.* [3.]*Washington University, St. Louis, MO, United States.* [4.]*CNRS 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. Toon[1], Eric Wolf[1], Richard A. Urata[2]
[1.]Univ. of Colorado, Boulder, CO, United States. [2.]NASA Ames Research Center, Moffett Field, CA, United States.

500.02 **The Energetics of a Collapsing Martian Atmosphere**
Alejandro Soto[1], Michael A. Mischna[2], Mark I. Richardson[3]
[1.]Southwest Research Institute, Boulder, CO, United States. [2.]Jet Propulsion Laboratory, Pasadena, CA, United States. [3.]Ashima 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 Wordsworth[1], Laura Kerber[2], François Forget[2], James W. Head[3], Jean-Baptiste Madeleine[3, 2], Ehouarn Millour[2], Kathleen Scanlon[3]
[1.]UChicago, Chicago, IL, United States. [2.]Laboratoire de Meteorologie Dynamique, Paris, France. [3.]Brown 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 Spiga[3], Stephen Lewis[4], Silvia Tellmann[5], Martin Pätzold[5], Sami Asmar[6], Bernd Häusler[7]
[1.]SETI Institute, Mountain View, CA, United States. [2.]Stanford University, Stanford, CA, United States. [3.]Université Pierre et Marie Curie, Paris, France. [4.]The Open University, Milton Keynes, United Kingdom. [5.]Universität zu Köln, Cologne, Germany. [6.]Jet Propulsion Laboratory, Pasadena, CA, United States. [7.]Universität der Bundeswehr München, Neubiberg, Germany.

500.05 **Inter-Annual Similarities during the Martian Dusty Season**
David M. Kass[1], Armin Kleinböhl[1], Dan J. McCleese[1], Tim Schofield[1], Michael D. Smith[2]
[1.]JPL, Pasadena, CA, United States. [2.]NASA Goddard Space Flight Cener, Greenbelt, MD, United States.
Contributing teams: MCS Team

500.06 **Extending the NASA Ames Mars General Circulation Model to Explore Mars' Middle Atmosphere**
Amanda Brecht[1], Jeffery Hollingsworth[1], Melinda Kahre[1], James Schaeffer[1]
[1.]Nasa 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 Gagné[1], Jean-Loup Bertaux[2], Francisco González-Galindo[3], Franck Montmessin[2]
[1.]Canadian Centre for Climate Modelling and Analysis, Environment Canada, Victoria, BC, Canada. [2.]LATMOS/INSU, Guyancourt, France. [3.]Instituto 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 Luhmann[1], Yingjuan Ma[2], Demet Ulusen[3], David Brain[4], Jasper Halekas[1], Jared Espley[5]
[1.]UC, Berkeley, Berkeley, CA, United States. [2.]IGPP UCLA, Los Angeles, CA, United States. [3.]TUBITAK, Ankara, Turkey. [4.]LASP University of Colorado, Boulder, CO, United States. [5.]GSFC, Greenbelt, MD, United States.

500.09 **Plasma Temperatures at Mars**
Majd Mayyasi-Matta[1], Michael Mendillo[1], Marina Galand[2], Luke Moore[1], Paul Withers[1]
[1.]Boston University, Boston, MA, United States. [2.]Imperial 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 Jessup[1]
[1.], Boulder, CO, United States.
Contributing teams: John Spencer

501.02 **Io's Post-Eclipse Atmosphere: Evidence Against Atmospheric Collapse During Eclipse**
Constantine Tsang[1], John R. Spencer[1], Kandis Lea Jessup[1], Nathaniel Cunningham[2], Kurt D. Retherford[3], Lorenz Roth[3], Joachim Saur[4]
[1.]Southwest Research Institute, Boulder, CO, United States. [2.]Nebraska Wesleyan University, Lincoln, NE, United States. [3.]Southwest Research Institute, San Antonio, TX, United States. [4.]University of Cologne , Cologne, Germany.

501.03 **HST/COS Detection of Atomic Oxygen Emissions from the Atmosphere of Callisto**
Nathaniel J. Cunningham[1], John R. Spencer[2], Paul D. Feldman[3], Darrell F. Strobel[3], Kevin France[4]
[1.]Nebraska Wesleyan University, Lincoln, NE, United States. [2.]Southwest Research Institute, Boulder, CO, United States. [3.]Johns Hopkins University, Baltimore, MD, United States. [4.]University of Colorado, Boulder, CO, United States.

501.04 **The Ultraviolet Albedo of Ganymede**
Melissa McGrath[1], Amanda Hendrix[2]
[1.]NASA Marshall Space Flight Center, Huntsville, AL, United States. [2.]Planetary Science Institute, Tucson, AZ, United States.

501.05 **Local Topographic Shielding and Radiation Shadows from Electron Irradiation on Europa**
Terry Hurford[1], John F. Cooper[1], Chris Paranicas[2], Richard Greenberg[3], Steven J. Sturner[1,4]
[1.]NASA GSFC, Greenbelt, MD, United States. [2.]APL, Laurel, MD, United States. [3.]Universty of Arizona, Tucson, AZ, United States. [4.]University 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. McKinnon[1], Michelle Kirchoff[2], Michael Bland[1]
[1.]Washington Univ., Saint Louis, MO, United States. [2.]Southwest Res. Inst., Boulder, CO, United States.

501.07 **A Chaos Conveyor Belt**
Britney E. Schmidt[1]
[1.]Earth 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. Bland[1], William B. McKinnon[1]
[1.]Washington University in St. Louis, Saint Louis, MO, United States.

501.09 **The Pinnacles of Callisto**
Jeffrey M. Moore[1], Alan D. Howard[2], Paul M. Schenk[3]
[1.]NASA Ames Research Center, Moffett Field, CA, United States. [2.]University of Virginia, Charlottesville, VA, United States. [3.]Lunar and Planetry 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 Cordiner[1], Stefanie N. Milam[1], Michael J. Mumma[1], Anthony Remijan[4], Lucas Paganini[1], Steven B. Charnley[1], Geronimo Villanueva[1], Jacques Crovisier[2], Nicolas Biver[2], Dominique Bockelee-Morvan[2], Jeremie Boissier[3], Iain M. Coulson[7], Yi-Jehng Kuan[5], Dariusz C. Lis[6]
[1.]NASA Goddard Space Flight Center, Greenbelt, MD, United States. [2.]Observatoire de Paris, Meudon, France. [3.]INAF, Bologna, Italy. [4.]NRAO, Charlottesville, WV, United States. [5.]National Taiwan Normal University, Taipei, Taiwan. [6.]Caltech, Pasadena, CA, United States. [7.]Joint 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. DiSanti[1], Michael J. Mumma[1], Geronimo L. Villanueva[1,2], Boncho P. Bonev[1,2], Erika L. Gibb[3], Hermann Böhnhardt[4], Manuela Lippi[4], Hans U. Käufl[5]
[1.]Goddard Center for Astrobiology, Greenbelt, MD, United States. [2.]Department of Physics, Catholic University of America, Washington, DC, United States. [3.]Department of Physics & Astronomy, University of Missouri, St. Louis, MO, United States. [4.]Max-Planck-Institut für Sonnensystemforschung, Katlenburg-Lindau, Niedersachsen, Germany. [5.]European 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 Biver[1], Vincent Debout[1], Dominique Bockelée-Morvan[1], Jacques Crovisier[1], Pierre Colom[1], Raphael Moreno[1], Jeremie Boissier[2], Gabriel Paubert[3], Dariusz C. Lis[5], Paul Hartogh[4], Neil Dello-Russo[6], Ronald Vervack[6], Harold A. Weaver[6]
[1.]LESIA, Obs. de Paris, Meudon, France. [2.]ESO/ARC-Bologna, Bologna, Italy. [3.]IRAM, Granada, Spain. [4.]MPS, Lindau, Germany. [5.]Caltech, Pasadena, CA, United States. [6.]Johns Hopkins Univ., APL, Laurel, MD, United States.

502.04 **Multi-Wavelength Observations of Comet C/2011 L4 (PanSTARRS)**
Bin Yang[1], Jacqueline V. Keane[1,2], Karen J. Meech[1,2], Tobias Owen [2], Richard Wainscoat[2]
[1.]NASA Astrobiology Institute, University of Hawaii, Honolulu, HI, United States. [2.]Institute 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. Cochran[1], Diane H. Wooden[2], Adam J. McKay[3], Gianna Cauzzi[4], Kevin Reardon[5], Gian Paolo Tozzi[4]
[1.]McDonald Observatory, Austin, TX, United States. [2.]Nasa Ames, Mountain View, CA, United States. [3.]New Mexico State Univ., Las Cruces, NM, United States. [4.]INAF-Arcetri, Florence, Italy. [5.]National Solar Observatory, Sunspot, NM, United States.

502.06 **Spatial Distribution and Rotational Variations of Comet 103/P Hartley 2's Volatiles**
Jessica Sunshine[1], Lori M. Feaga[1], Silvia Protopapa[1], Olivier Groussin[2], Sebastien Besse[3], Michael F. A'Hearn[1], Tony L. Farnham[1], Michael S. Kelley[1]
[1.]University of Maryland, College Park, MD, United States. [2.]Laboratoire d'Astrophysique de Marseille, CNRS and Université de Provence, Marseille, France. [3.]ESA/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 McKay[1], Nancy Chanover[1], Michael DiSanti[2], Jeffrey P. Morgenthaler[3], Geronimo Villanueva[2], Anita Cochran[4], Walter Harris[5], Neil Dello Russo[6], Ronald J. Vervack[6]
[1.]New Mexico State University, Las Cruces, NM, United States. [2.]NASA Goddard Space Flight Center, Greenbelt, MD, United States. [3.]Planetary Science Institute, Tucson, AZ, United States. [4.]University of Texas Austin/McDonald Observatory, Austin, TX, United States. [5.]University of California Davis, Davis, CA, United States. [6.]Johns 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 Decock[1], Philippe Rousselot[2], Emmanuel Jehin[1], Damien Hutsemékers[1], Jean Manfroid[1], Anil Bhardwaj[3], Susarla Raghuram[3]
[1.]Université de Liège, Département d'Astrophysique, de Géophysique et d'Océanographie, Liege, Belgium. [2.]Université de Franche-Comté, Observatoire des Sciences de l'Univers THETA, Institut UTINAM, Besançon, France. [3.]Space 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**
Rogerio Deienno[1, 2], David Nesvorný[2], Tadashi Yokoyama[3]
[1.]Instituto Nacional de Pesquisas Espaciais, São Paulo, São Paulo, Brazil. [2.]Southwest Research Institute, Boulder, CO, United States. [3.]Universidade 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 Morbidelli[1], Kevin J. Walsh[3], David P. O'Brien[4], Sean N. Raymond[5]
[1.]Observatoire de la Côte d'Azur, Nice, France. [2.]Bayerisches Geoinstitüt, Bayreuth, Germany. [3.]Southwest Research Institute, Boulder, CO, United States. [4.]Planetary Science Institute, Tucson, AZ, United States. [5.]Universite de Bordeaux, Floriac, France.

503.03 **Terrestrial Planet Formation During the Migration and Resonance Crossings of the Giant Planets**
Patryk S. Lykawka[1], Takashi Ito[2]
[1.]Kinki University , Higashiosaka, Osaka, Japan. [2.]National Astronomical Observatory of Japan, Mitaka, Tokyo, Japan.

503.04 **Dynamical Fate of Clumps Formed in Satellite Mergers**
Erik Asphaug[1], Desiree Cotto-Figueroa[1], Andreas Reufer[1]
[1.]ASU, Tempe, AZ, United States.

503.05 **Forming the small satellites of Pluto**
Harold F. Levison[1], Kevin Walsh[1]
[1.]Southwest 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. Rhoden[1], Hermes Jara-Orue[2], Terry Hurford[1], Bert Vermeersen[2]
[1.]NASA Goddard, Greenbelt, MD, United States. [2.]Delft University of Technology, Delft, Netherlands.

504.02 **Measurements of the spin states of Europa and Ganymede**
Jean-Luc Margot[1], Sebastiano Padovan[1], Donald Campbell[2], Stanton Peale[3], Frank Ghigo[4]
[1.]University of California, Los Angeles, Los Angeles, CA, United States. [2.]Cornell University, Ithaca, NY, United States. [3.]University of California, Santa Barbara, Santa Barbara, CA, United States.[4.]National 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 Kaluna[1], Karen Meech[1], Henry H. Hsieh[1]
[1.]Institute for Astronomy, UH Manoa, Honolulu, HI, United States.

505.02 **Properties of dust in inner cometary comae from polarimetric observations**
A. Levasseur-Regourd[1], Edith Hadamcik[2]
[1.]Univ. P. & M. Curie, LATMOS, paris , France. [2.]LATMOS, Guyancourt, France.

505.03 **Characteristics of Deep Impact Ejecta Dust in the Immediate Aftermath of Collision**
Ludmilla Kolokolova[1], Lev Nagdimunov[1], Michael Wolff[2], Michael A'Hearn[1], Tony Farnham[1]
[1.]University of Maryland, College Park, MD, United States. [2.]Space Science Institute, Boulder, CO, United States.

505.04 **Detailed Characterization of Low Activity Comet 49P/Arend-Rigaux**
Laurie Urban[1], Karen J. Meech[1], Stefano Mottola[2], Ekkehard Kuehrt[2]
[1.]Institute for Astronomy at the University of Hawaii, Honolulu, HI, United States. [2.]German 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 Lee[1], Mark Hofstadter[1], Margaret Frerking[1], Samuel Gulkis[1], Paul von Allmen[1], Lucas Kamp[1], Jacques Crovisier[2], Nicolas Biver[2], Dominique Bockele-Morvan[2], Mathieu Choukroun[1], Stephen Keihm[1], Michael Janssen[1]
[1.]JPL, California Institute of Technology, Pasadena, CA, United States. [2.]Observatoire de Paris-Meudon, Meudon, France.

505.06 **A Search For $^{15}NH_2$ Emission Lines In Comets**
Philippe Rousselot[1], Olivier Pirali[2], Emmanuël Jehin[3], Michel Vervloet[2], Damien Hutsemékers[3], Jean Manfroid[3], Daniel Cordier[1], Marie-Aline Martin[2], Sébastien Gruet[2], Alice Decock[3]
[1.]Institut UTINAM, OSU THETA, [25010] Besancon Cedex, France. [2.]Synchrotron SOLEIL, lignes AILES, [91192] Saint Aubin, France. [3.]Université de Liège, [4000] Liège, Belgium.

505.07 **FUV spectroscopy of the comet C/2001 Q4 (NEAT) with FIMS**
Yeo-Myeong Lim[1], Kyoung Wook Min[1], Paul D. Feldman[2]
[1.]Physics, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea, Republic of. [2.]Johns Hopkins University, Baltimore, MD, United States.

505.08 **Capabilities to measure isotopic ratios in water at comet 67P/Churyumov-Gerasimenko with ROSINA/DFMS**
Myrtha Hässig[1], Kathrin Altwegg[1], Hans Balsiger[1], Jean-Jacques Berthelier[2], Ursina Calmonte[1], Michael R. Combi[3], Johann De Keyser[4], Björn Fiethe[5], Stephen A. Fuselier[6], Martin Rubin[1]
[1.]Space Research and Planetary Sciences, University of Bern, Bern, Switzerland. [2.]LATMOS, Saint-Maur, France. [3.]AOSS, University of Michigan, Ann Arbor, MI, United States. [4.]Space Physics Division, BIRA IASB, Brussels, Belgium. [5.]Institute of Computer and Network Engineering, TU Braunschweig, Braunschweig, Germany. [6.]Southwest 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 & Brigette Hesman

506.01 **An Intense Red Jovian Cyclone: Another Key to Finding the Chromophores?**
Amy A. Simon-Miller[1], Robert W. Carlson[2], Agustin Sanchez-Lavega[3]
[1.]NASA's GSFC, Greenbelt, MD, United States. [2.]Jet Propulsion Laboratory, Pasadena, CA, United States. [3.]Universidad del País Vasco, Bilbao, Spain.

506.02 **Spot-On: Ammonium Hydrogen Sulfide and Jupiter's Great Red Spot**
Mark Loeffler[1], Reggie Hudson[1], Nancy Chanover[2], Amy Simon-Miller[1]
[1.]NASA GSFC, Greenbelt, MD, United States. [2.]New Mexico State University, Las Cruces, NM, United States.

506.03 **The Deep Cloud Structure and Volatile Abundances in Jupiter's Great Red Spot**
Gordon Bjoraker[1], Imke de Pater[2], Michael H. Wong[2], Mate Adamkovics[2], Tilak Hewagama[3]
[1.]NASA's GSFC, Greenbelt, MD, United States. [2.]Univ. California-Berkeley, Berkeley, CA, United States. [3.]Univ. of Maryland, College Park, MD, United States.

506.04 **Saturn Limb Hazes as Seen from Cassini**
Kathy Rages[1], Erika Barth[2]
[1.]SETI Institute, Mountain View, CA, United States. [2.]Southwest Research Institute, Boulder, CO, United States.

506.05 **Microphysical Modeling of Saturn Limb Hazes**
Erika L. Barth[1], Kathy Rages[2]
[1.]Southwest Research Inst., Boulder, CO, United States. [2.]SETI Institute, Mountain View, CA, United States.

506.06 **Seasonal changes in Saturn's stratosphere from Cassini/CIRS data**
Melody Sylvestre[1, 2], Thierry Fouchet[1], Sandrine Guerlet[2], Aymeric Spiga[2], Frederic M. Flasar[3], Brigette E. Hesman[3], Gordon L. Bjoraker[3]
[1.]LESIA - Observatoire de Paris, Meudon, France. [2.]LMD, Paris, France. [3.]GSFC/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 Roman[1], Don Banfield[1], Peter Gierasch[1], Barney Conrath[1], Daphne Stam[2]
[1.]Cornell University, Ithaca, NY, United States. [2.]Technical 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. Cruikshank[2], Jeffrey N. Cuzzi[2], Antonella Barucci[3], Joshua P. Emery[4]
[1.]SETI Institute , Mountain View, CA, United States. [2.]NASA Ames, Moffett Field, CA, United States. [3.]LESIA, Observatoire de Paris, Meudon , France. [4.]University of Tennessee, Knoxville , TN, United States.

507.02 **Atmospheres on Volatile-Bearing Kuiper Belt Objects**
Leslie Young[1], William B. McKinnon[2]
[1.]Southwest Research Inst., Boulder, CO, United States. [2.]Washington University, Saint Louis, MO, United States.

507.03 **IR Measurements of Icy Solids of the Outer Solar System: A New Spectral Database**
Reggie L. Hudson[1], Marla H. Moore[1], Robert F. Ferrante[2], Perry A. Gerakines[1], Mark J. Loeffler[1]
[1.]NASA Goddard Space Flight Center, Greenbelt, MD, United States. [2.]US Naval Academy , Annapolis, MD, United States.

507.04 **Short-term variability of binary and non-binary Trans-Neptunian Objects**
Audrey Thirouin[1], Keith S. Noll[2], Adriano Campo Bagatin[3], Jose L. Ortiz Moreno[1], Nicolas Morales[1]
[1.]Instituto de Astrofisica de Andalucia (IAA-CSIC), Granada, Spain. [2.]NASA-GSFC, Greenbelt, MD, United States. [3.]Universidad de Alicante, Alicante, Spain.

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]
[1.]UC Berkeley, Berkeley, CA, United States. [2.]Harvard-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 Greenstreet[1], Mike Alexandersen[1], Brett Gladman[1], J. Kavelaars[2], Jean-Marc Petit[3], Stephen Gwyn[2]
[1.]University of British Columbia, Vancouver, BC, Canada. [2.]National Research Council of Canada, Victoria, BC, Canada. [3.]Institut UTINAM, CNRS-UMR [6213,]Observatoire de Besancon, Besancon Cedex, France.

508.03 **Capture Of Trojans By Jumping Jupiter**
David Nesvorny[1], David Vokrouhlicky[2], Alessandro Morbidelli[3]
[1.]SWRI, Boulder, CO, United States. [2.]Institute of Astronomy, Prague, Czech Republic. [3.]Observatoire de la Cote D'Azur, Nice, France.

508.04 A Herschel-PACS view of 16 Centaurs

Rene Duffard[1], Noemi Pinilla-Alonso[1, 2], Pablo Santos-Sanz[1], Esa Vilenius[3], Jose Luis Ortiz[1], Thomas Mueller[3], Sonia Fornasier[4], Emmanuel Lellouch[4], M. Mommert[5], A. Pal[6], C. Kiss[6], M. Mueller[7], J. Stansberry[8], A. Delsanti[9], N. Peixinho[10, 11]

[1.]Instituto de Astrofisica de Andalucia - CSIC, Granada, Granada, Spain. [2.]Department of Earth and Planetary Sciences, University of Tennessee, [1412] Circle Dr, Knoxville TN [37996-1410,]USA, Tennessee, TN, United States. [3.]Max-Planck-Institut fur extraterrestrische Physik, Garching, Germany. [4.]LESIA-Observatoire de Paris, CNRS, UPMC Univ. Paris [6.]Univ. Paris-Diderot, Paris, Paris, France. [5.]Deutsches Zentrum fur Luft- und Raumfahrt e.V., Institute of Planetary Research, Berlin, Berlin, Germany. [6.]Konkoly Observatory of the Hungarian Academy of Sciences, Budapest, Budapest, Hungary. [7.]SRON, Netherlands Institute for Space Research, Low Energy Astrophysics, Groningen, Netherlands. [8.] Stewart Observatory, The University of Arizona, Tucson, AZ, United States.[9.]Laboratoire d'Astrophysique de Marseille, CNRS \& Universite de Provence, Marseille, France. [10.] Center for Geophysics of the University of Coimbra, Geophysical and Astronomical Observatory of the University of Coimbra, Coimbra, Portugal. [11.]Unidad de Astronomia de la Universidad de Antofagasta, Antofagasta, Chile.

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

John A. Stansberry[1], Thomas Müller[3], Emmanuel Lellouch[4], Antonella Barucci[4], Sonia Fornasier[4], Csaba Kiss[8], Pedro Lacerda[2], Tanya Lim[5], Michael Mommert[7, 9], Jose-Luis Ortiz[6], Andras Pal[8], Pablo Santos-Sanz[6], Esa Vilenius[3]

[1.]Space Telescope Science Institute, Baltimore, MD, United States. [2.]Queen's University Belfast, Belfast, Ireland. [3.]Max Planck Institute, Garching, Germany. [4.]Observatoire de Paris-Meudon, Paris, France. [5.]Rutherford Appleton Labs, Didcot, United Kingdom. [6.] IAA-CSIC, Granada, Spain. [7.]Northern Arizona University, Flagstaff, AZ, United States. [8.] Konkoly Observatory, Budapest, Hungary.[9.]German 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 Grav[3], A. K. Mainzer[1], Joseph R. Masiero[1], Erin Blauvelt[1], Rachel Stevenson[1], Emily Kramer[1, 4], Yan R. Fernandez[4], C. M. Lisse[5], Roc M. Cutri[2], Paul R. Weissman[1], John W. Dailey[2], Frank J. Masci[2], Russel Walker[6], Adam Waszczak[7], Carrie R. Nugent[1], Karen J. Meech[8, 9], Andrew Lucas[2], George Pearman[2, 10], Ashlee Wilkins[11], Jessica Watkins[12], Shrinivas Kulkarni[13], Edward L. Wright[14]

[1.]Jet Propulsion Lab., Pasadena, CA, United States. [2.]Infrared Processing and Analysis Center, California Institute of Technology, Pasadena, CA, United States. [3.]Planetary Science Institute, Tucson, AZ, United States. [4.]Department of Physics, University of Central Florida, Orlando, FL, United States. [5.]Applied Physics Laboratory, Johns Hopkins University, Laurel, MD, United States. [6.]Monterey Institute for Research in Astronomy, Marina, CA, United States. [7.]Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, CA, United States. [8.]Institute for Astronomy, University of Hawaii, Manoa, HI, United States. [9.]NASA Astrobiology Institute, Institute for Astronomy, University of Hawaii, Manoa, HI, United States. [10.]University of California, Berkeley, Berkeley, CA, United States. [11.]Dept. of Astronomy, Univ. of Maryland, College Park, MD, United States. [12.]Institute for Planets and Exoplanets, University of California, Los Angeles , CA, United States. [13.]Division of Mathematics, Physics, and Astronomy, California Institute of Technology, Pasadena, CA, United States. [14.]Department 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. Brown[1]

[1.]Caltech, 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. Gladman[4]
[1.]University of Victoria, Victoria, BC, Canada. [2.]National Research Council of Canada, Victoria, BC, Canada. [3.]Institut UTINAM, CNRS-UMR [6213,]Observatoire de Besancon, Besancon Cedex, France.[4.]University of British Columbia, Vancouver, BC, Canada.

508.09 **Trojans and Plutinos as probes of planet building**
Mike Alexandersen[1], Brett Gladman[1], J. J. Kavelaars[2], Jean-Marc Petit[3], Stephen Gwyn[2], Sarah Greenstreet[1]
[1.]University of British Columbia, Vancouver, BC, Canada. [2.]National Research Council of Canada, Victoria, BC, Canada. [3.]Institut 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 Liu[1], Tapio Schneider[2, 1]
[1.]Caltech, Pasadena, CA, United States. [2.]ETH Zurich, Zurich, Switzerland.

509.02 **Modeling the Transition From Jets to Polar Turbulence in Giant Planet Atmospheres**
Nicholas Heavens[1], Kunio Sayanagi[1]
[1.]Hampton University, Hampton, VA, United States.

509.02 **Modeling the Transition From Jets to Polar Turbulence in Giant Planet Atmospheres**
Nicholas Heavens[1], Kunio Sayanagi[1]
[1.]Hampton University, Hampton, VA, United States.

509.03 **Atmospheric Circulation of Highly Tilted Planets**
Michael Sussman[1], Adam P. Showman[1]
[1.]LPL / 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 Guerlet[1], Aymeric Spiga[1], Melody Sylvestre[1, 2], Thierry Fouchet[2], Ehouarn Millour[1], Robin Wordsworth[3], Jeremy Leconte[1], François Forget[1]
[1.]LMD/IPSL, Paris, France. [2.]LESIA/Observatoire de Paris, Meudon, France. [3.]University 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. Sayanagi[1], Shawn P. Ewald[2], Ulyana A. Dyudina[2], Andrew P. Ingersoll[2]
[1.]Hampton University, Hampton, VA, United States. [2.]California Institute of Technology, Pasadena, CA, United States.

509.07 **IRTF/TEXES observations of Saturn's stratospheric beacon**
Thierry Fouchet[1], Thomas K. Greathouse[2], Matthew J. Richter[3], John Lacy[4], Leigh Fletcher[5], Aymeric Spiga[6]
[1.]Observatoire de Paris, Meudon, France. [2.]SWRI, San Antonio, TX, United States. [3]University of California, Davis, CA, United States. [4.]University of Texas, Austin, TX, United States. [5.]University of Oxford, Oxford, United Kingdom. [6.]Institut 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. Sromovsky[1], Kevin H. Baines[1], Patrick M. Fry[1]
[1.]Univ. of Wisconsin, Madison, Madison, WI, United States.

509.09 **Modeling Saturn's Giant Storms: Water, Ammonia, and the 30-Year Periodicity**
Cheng Li[1], Andrew P. Ingersoll[1]
[1]California 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. Lissauer[1], Gennaro D'Angelo[1], Stuart J. Weidenschilling[2], Peter Bodenheimer [3], Olenka Hubickyj[1, 3]
[1]NASA Ames Research Center, Moffett Field, CA, United States. [2]Planetary Science Institute, Tucson, AZ, United States. [3]University of California, Santa Cruz, CA, United States.

510.02 **On the Minimum Core Mass for Giant Planet Formation**
Andrew Youdin[1], Ana Piso[2]
[1]JILA, CU Boulder, Boulder, CO, United States. [2]Harvard University, Cambridge, MA, United States.

510.03 **Pebble formation at the water ice line**
Katrin Ros[1], Anders Johansen[1]
[1]Department of astronomy and theoretical physics, Lund University, Lund, Sweden.

510.04 **Formation and Composition of Giant Planets by Pebble Accretion**
Michiel Lambrechts[1], Anders Johansen[1], Alessandro Morbidelli[2]
[1]Lund University, Lund, Sweden. [2]Observatoire de la Cote d'Azur, Nice, France.

510.05 **Gas Accretion by Giant Planets: 3D Simulations of Gap Opening and Dynamics of the Circumplanetary Disk**
Alessandro Morbidelli[1], Judit Szulagyi[2], Aurelien Crida[2], Takayuki Tanigawa[3], Elena Lega[1], Frederic Masset[4], Bertram Bitsch[1]
[1]CNRS, Nice, Cedex [4]France, France. [2]Universite' de Nice - Sophia Antipolis, Nice, France. [3]Hokkaido University, Sapporo, Japan. [4]Universidad Nacional Autonoma de Mexico, Mexico City, Mexico.

510.06 **Giant Planet Formation with Pebble Accretion**
John E. Chambers[1]
[1]Carnegie 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 Winter[1], Masayoshi Tsuchida[5]
[1]UNESP - Guaratingueta, Guaratingueta, SP, Brazil, Brazil. [2]Observatoire de la Côte d'Azur, Nice, France. [3]UH - Institute for Astronomy , Honolulu, HI, United States. [4]UH - NASA Astrobiology Institute, Honolulu, HI, United States. [5]UNESP - IBILCE, Sao Jose do Rio Preto, Brazil.

510.08 **Experimental Studies of Low-Velocity Dust Aggregate Collisions**
Adrienne Dove[1], Joshua Colwell[1], Christopher Vamos[1], Christopher Tiller[1], Allyson Whitaker[1]
[1]University of Central Florida, Orlando, FL, United States.

510.09 **Re-accretion Efficiencies in Small Impactor – Large Target Collisions**
Tim Jankowski[1], Gerhard Wurm[1], Teiser Jens[1]
[1]Institut 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. Rabinowitz[1], Megan E. Schwamb[1], Ellie Hadjiyska[1]
[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. Belton[1]
[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 Nesvorny[2]
[1.]Instituto Nacional de Pesquisas Espaciais - INPE, São José dos Campos, SP, Brazil. [2.] Southwest Research Institute - SwRI, Bouder, 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. Sheppard[1], Chad Trujillo[2]
[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. Trujillo[1], Scott S. Sheppard[2]
[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 Noll[3], Audrey Thirouin[4], Erin Ryan[3], Will Grundy[5], Anne Verbiscer[6], Alan Doressoundiram[7], Daniel Hestroffer[7], Rachel Beaton[6], David Rabinowitz[8], Nancy Chanover[9]
[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 Fight Center, Greenbelt, MD, United States. [4.]Instituto de Astofisica de Andalucai , 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 Crues, NM, United States.

511.07 **High Precision Lightcurves of A Mutual Event of Transneptunian Binary (79360) Sila-Nunam From Gemini Observatory**
Anne J. Verbiscer[1], Will Grundy[2], Susan Benecchi[3], David Rabinowitz[4], Michael F. Skrutskie[1]
[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. Buie[1], John M. Keller[2]
[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 Fraser[1], Stephen Gwyn[1], Chad Trujillo[2], Michael E. Brown[4], Jj Kavelaars[1], Andrew Stephens[2], German Gimeno[3]
[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. Steffl[1], Adam B. Shinn[1]
[1]Southwest Research Institute, Boulder, CO, United States.

512.02 **The Variability of Saturn's Plasma Torus**
John D. Richardson[1], H. Todd Smith[2]
[1]MIT, Cambridge, MA, United States. [2]APL, Laurel, MD, United States.

512.03 **The thermosphere of Saturn from Cassini UVIS occultations**
Tommi Koskinen[1], Bill R. Sandel[1], Roger V. Yelle[1], Fernando J. Capalbo[2], Gregory M. Holsclaw[3], Bill E. McClintock[3], Scott Edgington[4]
[1]Lunar and Planetary Laboratory, Tucson, AZ, United States. [2]Laboratoire Interuniversitaire des Systemes Atmospheriques, Universites Paris Est Creteil et Paris Diderot , Creteil, France. [3]Laboratory for Atmospheric and Space Physics, Boulder, CO, United States. [4]Jet Propulsion Laboratory, Pasadena, CA, United States.

512.04 **The Ionosphere of Saturn as Observed by Cassini Radio Science**
Arvydas J. Kliore[1], Andrew F. Nagy[2], Aseel Anabtawi[1]
[1]JPL, Pasadena, CA, United States. [2]Univ. of Michigan, Ann Arbor, MI, United States.

512.05 **Cassini UVIS Saturn Auroral Images from the 2013 HST/Cassini Campaign**
Wayne R. Pryor[1], Alain Jouchoux[2], Larry Esposito[2], Frank Crary[2], Katerina Radioti[3], Denis Grodent[3], Jacques Gustin[3], Jean-Claude Gerard[3], William Kurth[4], Don MItchell[5], Jonathan Nichols[6], Sarah Badman[6]
[1]Central Arizona College, Coolidge, AZ, United States. [2]LASP/University of Colorado, Boulder, CO, United States. [3]University of Liege, Liege, Belgium. [4]University of Iowa, Iowa City, IA, United States. [5]APL/JHU, Laurel, MD, United States. [6]University 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 Moore[1], James O'Donoghue[2], Ingo Mueller-Wodarg[3], Michael Mendillo[1]
[1]Boston Univ., Boston, MA, United States. [2]University of Leicester, Leicester, United Kingdom. [3]Imperial College London, London, United Kingdom.

512.06 **Saturn's Ring Rain: Initial Estimates of Ring Mass Loss Rates**
Luke Moore[1], James O'Donoghue[2], Ingo Mueller-Wodarg[3], Michael Mendillo[1]
[1]Boston Univ., Boston, MA, United States. [2]University of Leicester, Leicester, United Kingdom. [3]Imperial 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. Nicholson[1]
[1]Cornell Univ., Ithaca, NY, United States. [2]University of Idaho, Moscow, ID, United States.

512.08 **Giant Planet Seismology: Constraining the Interior Structure of Saturn from Waves in its Rings**
Jim Fuller[1], Dong Lai[1], Natalia Shabaltas[1]
[1]Cornell University, Ithaca, NY, United States.

512.09 **Diamond and other forms of elemental carbon in Saturn's deep atmosphere**
M. L. Delitsky[1], K. H. Baines[2]
[1]California Specialty Engineering, Flintridge, CA, United States. [2]University 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 Deckers[1], Jens Teiser[1]
[1.]Universität Duisburg-Essen, Duisburg, Germany.

513.02 **Mercury-like Planets: Separating Metals and Silicates by Photophoresis**
Gerhard Wurm[1], Mario Trieloff[2], Heike Rauer[3, 4], Markus Kuepper[1]
[1.]Fakultät für Physik, Universität Duisburg-Essen, Duisburg, Germany. [2.]Institut für Geowissenschaften, Universität Heidelberg, Heidelberg, Germany. [3.]Institut für Planetenforschung, Extrasolare Planeten und Atmosphären, DLR, Berlin, Germany. [4.]Zentrum für Astronomie und Astrophysik, Technische Universität Berlin, Berlin, Germany.

513.03 **The Tethered Moon**
Kevin Zahnle[1], Roxana Lupu[2], Bruce Fegley[3], Mark Marley[1], Norman Sleep[4], Anthony Dobrovolskis[2]
[1.]NASA Ames Research Center, Moffett Field, CA, United States. [2.]SETI Institute, Mountain View, CA, United States. [3.]Washington University, St. Louis, MO, United States. [4.]Stanford University, Stanford, CA, United States.

513.04 **Accretion of the Moon from non-canonical impacts**
Julien Salmon[1], Robin M. Canup[1]
[1.]Southwest 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. Walsh[1], Harold F. Levison[1]
[1.]Southwest Research Institute, Boulder, CO, United States.

513.06 **Small mass planets migration in radiative discs**
Elena Lega[1], Aurelien Crida[1], Bertram Bitsch[1], Alessandro Morbidelli[1]
[1.]Observatoire de La Côte D'Azur, Nice, Cedex [4.]France, France.

513.07 **Structure of evolving Accretion Discs and their Implications to the Formation of Planetary Cores**
Bertram Bitsch[1], Alessandro Morbidelli[1], Aurélien Crida[1], Elena Lega[1]
[1.]OCA, Nice, France.

513.08 **Exposing the Long Lives of Circumplanetary Disks**
Yuri Fujii[1], Satoshi Okuzumi[1, 2], Takayuki Tanigawa[3], Shu-ichiro Inutsuka[1]
[1.]Nagoya University, Nagoya, Aichi, Japan. [2.]Tokyo Institute of Technology, Tokyo, Tokyo, Japan. [3.]Hokkaido University, Sapporo, Hokkaido, Japan.

513.09 **Constraining the Feasibility of Planet Formation in Close Binaries**
Hannah Jang-Condell[1]
[1.]University of Wyoming, Laramie, WY, United States.

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