46th Meeting of the
Division for Planetary Sciences
with Historical Astronomy Division (HAD)

9-14 November 2014 | Tucson, AZ

Session Numbering Key

100s Monday

200s Tuesday

300s Wednesday

400s Thursday

500s Friday

Sessions are numbered in the program book by day and time.

All posters will be on display Monday - Friday

Changes after 1 October are included only in the online program materials.

DPS OFFICERS AND MEMBERS

Current DPS Officers

Heidi Hammel	*Chair*
Bonnie Buratti	*Vice-Chair*
Athena Coustenis	*Secretary*
Andrew Rivkin	*Treasurer*
Nick Schneider	*Education and Public Outreach Officer*
Vishnu Reddy	*Press Officer*

Current DPS Committee Members

Rosaly Lopes	*Term Expires November 2014*
Robert Pappalardo	*Term Expires November 2014*
Ralph McNutt	*Term Expires November 2014*
Ross Beyer	*Term Expires November 2015*
Paul Withers	*Term Expires November 2015*
Julie Castillo-Rogez	*Term Expires October 2016*
Jani Radebaugh	*Term Expires October 2016*

SPONSORS

EXHIBITORS

Platinum Exhibitor

NASA

Silver Exhibitors

APL JOHNS HOPKINS APPLIED PHYSICS LABORATORY

LOCKHEED MARTIN

Department of Planetary Sciences
Lunar and Planetary Laboratory

PLANETARY SCIENCE INSTITUTE
EST. 1972

ICARUS
International Journal of Solar System Studies

USRA

IAU

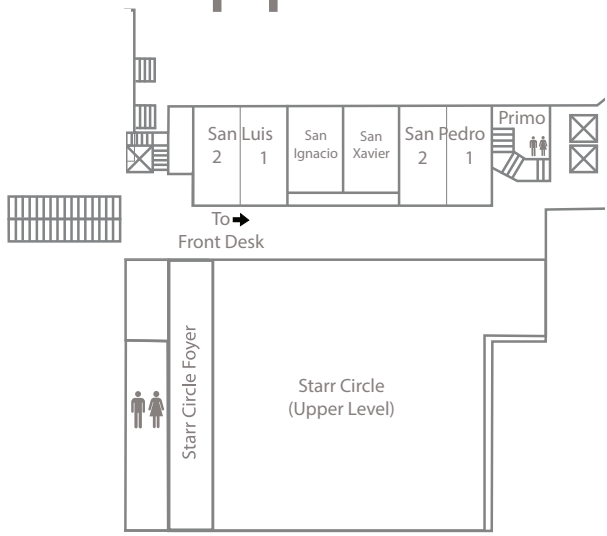
uwingu

EXHIBIT BOOTH ASSIGNMENTS

206	Applied Physics Lab - Johns Hopkins University
102	Astro Haven Enterprises
105	Boeing
104	Cambridge University Press
107	Icarus
103	International Astronomical Union - IAU
106	Large Synoptic Survey Telescope - LSST
101	Lockheed Martin
208	Lowell Observatory
203	Lunar and Planetary Laboratory
110	NASA Astrophysics Data System - ADS
100	NASA Planetary Science
113	NExScI / Kepler
114	Planetary Data System
204	Planetary Science Institute
109	Space Telescope Science Institute
108	Springer
112	The University of Arizona Press
200	Universities Space Research Association - USRA
201	Uwingu

Shared Book Exhibit - Princeton University Press

Upper Level



Lower Level

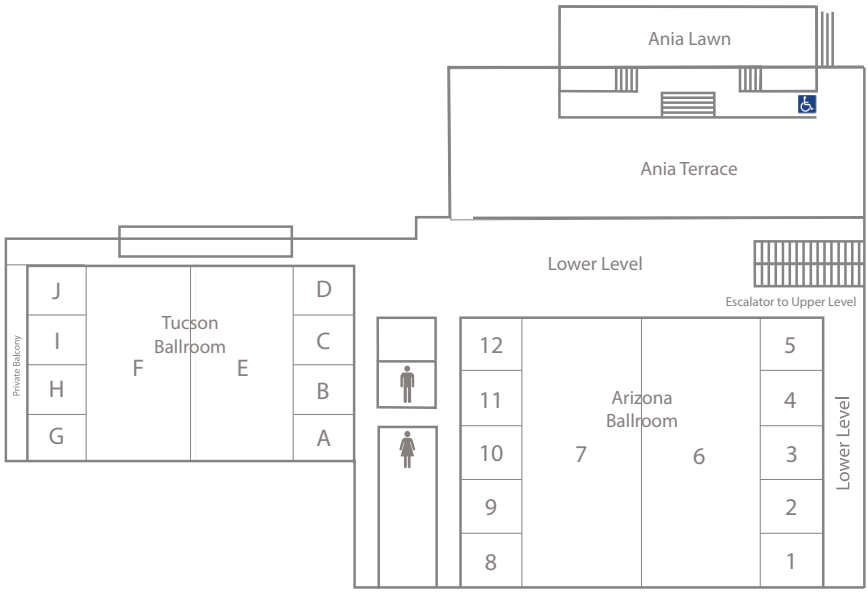


EXHIBIT HALL FLOOR PLAN

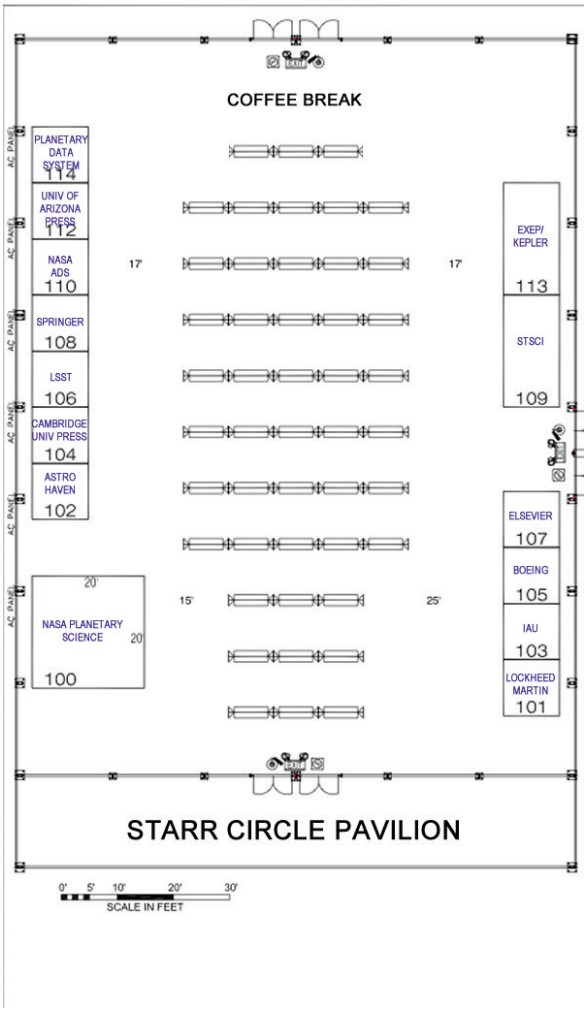
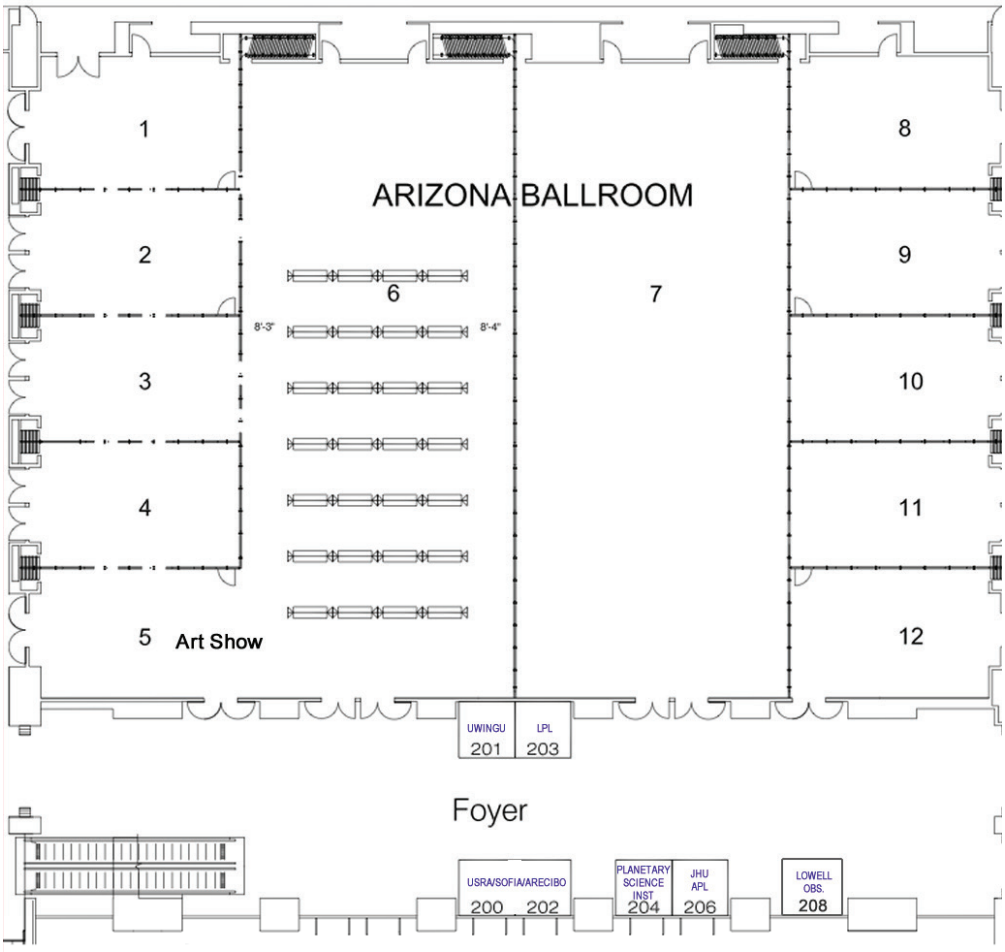


EXHIBIT HALL FLOOR PLAN



ATTENDEE SERVICES

Please wear your badge at all times during the meeting. Attendees who do not have their name badges on will be denied entrance to meeting rooms, the exhibit hall, etc. Please do not leave personal items unattended. The AAS is not responsible for lost or stolen property.

Registration

Starr Circle Foyer

Sunday: 3:00 pm - 8:00 pm
Monday: 7:30 am - 5:00 pm
Tuesday - Thursday: 8:00 am - 4:00 pm
Friday: 8:00 am - 12:00 pm

Exhibit Hall

Starr Circle Pavilion and Arizona Foyer

Monday - Thursday: 9:00 am - 6:00 pm
Friday: 9:00 am - 3:30 pm

Exhibit Hall Events

Morning Coffee Break, daily: 10:00 am - 10:30 am
Afternoon Coffee Break, Monday and Friday: 3:30 pm - 4:00 pm
Thursday: 2:40 pm - 3:00 pm

Poster Session

Starr Circle Pavilion and Arizona Ballroom
Tuesday: 3:30 pm - 6:00 pm
Thursday: 4:00 pm - 6:00 pm

Posters not removed by closing time on Friday will be recycled.

Art Show

Arizona Ballroom 5

Selected artwork from the second annual Lunar and Planetary Laboratory Art of Planetary Science Exhibition

Monday - Thursday: 9:00 am - 6:00 pm
Friday: 9:00 am - 3:30 pm

Speaker Ready Room

Tucson Ballroom D

Sunday: 3:00 pm - 5:00 pm
Monday - Friday: 7:30 am - 4:00 pm

Cyber Cafe

Star Circle Pavilion

Monday - Thursday: 9:00 am - 6:00 pm
Friday: 9:00 am - 3:30 pm

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

Using Your Own Laptop or Mobile Device While at the Meeting

- The network is monitored throughout the meeting, and the AAS staff reserves the right to disconnect any device that is causing network problems or harm to other devices.
- Please keep your software up to date and use a firewall and virus/spyware protection when necessary.
- No device should be running as a server for offsite clients.
- Absolutely no routers may be attached to the network without prior authorization from the AAS IT staff.
- Wireless service will be available throughout the entire meeting space, though some areas may experience limited connectivity. Wireless access information is printed on the back of your badge. Please note that the wireless is not encrypted.
- Due to FCC regulations and physical laws, some of the available wireless spectrum can become overcrowded and temporarily unusable, which limits connectivity and speeds. We work hard to avoid this without breaking the laws set by the government or physics.
- Wireless connections will be dropped after 40 minutes of inactivity.

SCHEDULE AT-A-GLANCE

Sunday, 9 November 2014	
8:00 am	**Workshop:** AAS/DPS Astronomy Ambassadors Outreach Workshop, 8:00 am - 5:00 pm, Tucson Ballroom 1
	Workshop: Using Planetary Science in K-12 Classrooms, 8:00 am - 5:00 pm, Tucson Ballroom H
8:30 am	**Workshop:** Scientific Opportunities in Cislunar Space, 8:30 am - 5:00 pm, Tucson Ballroom G
10:00 am	Volunteer Orientation, 10:00 am - 11:00 am, Tucson Ballroom J
12:00 pm	**Workshop:** NASA Proposal Writing Workshop, 12:00 pm - 5:00 pm, Arizona Ballroom 11/12
1:00 pm	**Workshop:** Become a Media-Savvy Scientist, 1:00 pm - 5:00pm, San Pedro
	Workshop: JWST Workshop on Potential Science Investigations, 1:00 pm - 4:00 pm, Arizona Ballroom 9
2:00 pm	**Workshop:** Solar System Challenges: Citizen Science, 2:00 pm - 4:30 pm, Arizona Ballroom 8
2:30 pm	**Workshop:** How to be a PI: Project Management & Leadership, 2:30 pm - 4:30 pm, Tucson Ballroom J
3:00 pm	Registration, 3:00 pm - 8:00 pm, Starr Circle Foyer
	Speaker Ready Room, 3:00 pm - 5:00 pm, Tucson D
6:30 pm	Opening Reception, 6:30 pm - 8:00 pm, Ania Terrace and Ania Foyer
Monday, 10 November 2014	
7:15 am	Session Chair Breakfast, 7:15 am - 8:00 am, Tucson Ballroom J
7:30 am	Registration, 7:30 am - 4:00 pm, Starr Circle Foyer
	Speaker Ready Room, 7:30 am - 4:00 pm, Tucson Ballroom D
8:30 am	**Oral Sessions 100-102, 8:30 am - 10:00 am**
	100 Rosetta 1, Tucson Ballroom E/F
	101 Exoplanet Atmosphere Theory, Arizona Ballroom 7
	102 Titan 1: Atmospheric Structure and Time Variability, Arizona Ballroom 11/12
9:00 am	Exhibits, 9:00 am - 6:00 pm, Starr Circle Pavilion and Arizona Foyer
	Cyber Café, 9:00 am - 6:00 pm, Starr Circle Pavilion
	Art Show, 9:00 am - 6:00 pm, Arizona Ballroom 5
10:00 am	Coffee Break, 10:00 am - 10:30 am, Starr Circle Pavilion and Arizona Foyer

Monday, 10 November 2014 (continued)	
10:30 am	**Oral Sessions 103-106, 10:30 am - 12:00 pm**
	103 Rosetta 2 / Comet Coma Chemistry and Nuclear Outbursts Tucson Ballrooms E/F
	104 Exoplanet Atmosphere Observations, Arizona Ballroom 7
	105 Titan 2: Atmospheric Chemistry, Arizona Ballrooms 11/12
	106 History of Planetary Astronomy (10:30 am - 11:30 am), Tucson G
12:00 pm	Lunch Break, 12:00 pm - 1:30 pm
	Press Conference, 12:00 pm - 1:30 pm, Tucson Ballroom B
	Workshop: Pluto Observing Campaign Supporting New Horizons, 12:00 pm - 1:00 pm, San Luis 1
1:00 pm	**Workshop:** Re-Numerate: Restoring Essential Numberical Skills, 1:00 pm - 5:00 pm, San Luis 2
1:30 pm	**Plenary Sessions: 107-109, 1:30 pm - 3:30pm, Tucson Ballrooms E/F**
	Welcome; Presentation of the Gerard P. Kuiper Prize, 1:30 pm - 1:45 pm
	107 Gerard P. Kuiper Prize: Moist Convection, Peter Gierasch (Cornell University), 1:45 pm - 2:20 pm
	108 Hot Facts About Cool Comets, Anita Cochran (University of Texas, McDonald Observatory), 2:20 pm - 2:55 pm
	109 Exoplanets: A New Era of Comparative Planetology, Victoria Meadows (University of Washington), 2:55 pm - 3:30 pm
3:30 pm	Coffee Break, 3:30 pm - 4:00 pm, Starr Circle Pavilion and Arizona Foyer
4:00 pm	**Oral Sessions 110-112, 4:00 pm - 5:30 pm**
	110 Comets K1 (PanStarrs) and A1 (Siding Spring) Tucson Ballrooms E/F
	111 Exoplanet Atmospheric Retrieval, Arizona Ballroom 7
	112 Titan 3: Surface Composition and Hydrology Arizona Ballrooms 11/12
5:30 pm	**Oral Sessions 113-115, 5:30 pm - 6:00 pm**
	113 Sun-grazing Comet ISON, Tucson Ballrooms E/F
	114 Exoplanet Eclipses and Phase Curves from Kepler Arizona Ballroom 7
	115 Titan 4: Surface Geology (until 6:20 pm) Arizona Ballrooms 11/12
7:30 pm	Agency Night, 7:30 pm - 9:30 pm, Tucson E/F

SCHEDULE AT-A-GLANCE

Tuesday, 11 November 2014		
7:15 am	Session Chair Breakfast, 7:15 am - 8:00 am, Tucson Ballroom J	
7:30 am	Speaker Ready Room, 7:30 am - 4:00 pm, Tucson Ballroom D	
8:00 am	Registration, 8:00 am - 4:00 pm, Starr Circle Foyer	
8:30 am	**Oral Sessions 200-202, 8:30 am - 10:00 am**	
	200 Comet Dust, Tails, Trails and Oddballs, Tucson Ballrooms E/F	
	201 Exoplanet Orbital Dynamics and the Future Arizona Ballroom 7	
	202 Education, Arizona Ballrooms 11/12	
9:00 am	Exhibits, 9:00 am - 6:00 pm, Starr Circle Pavilion and Arizona Foyer	
	Cyber Café, 9:00 am - 6:00 pm, Starr Circle Pavilion	
	Art Show, 9:00 am - 6:00 pm, Arizona Ballroom 5	
10:00 am	Coffee Break, 10:00 am - 10:30 am, Starr Circle Pavilion and Arizona Foyer	
	Workshop: Solar System Observations with the K2 Mission, 10:00 am - 12:00 pm, Arizona Ballroom 1-4	
10:30 am	**Oral Sessions 203-206, 10:30 am - 12:00 pm**	
	203 Mars Surface and Interior, Tucson Ballrooms E/F	
	204 Exoplanet Observations and Models, Arizona Ballroom 7	
	205 Moon/Mercury Surface , Arizona Ballrooms 11/12	
12:00 pm	Lunch Break, 12:00 pm - 1:30 pm	
	Press Conference, 12:00 pm - 1:30 pm, Tucson Ballroom B	
	Women in Planetary Science Lunch, 12:00 pm - 1:30 pm, Arizona Ballroom 8	
1:30 pm	**Plenary Sessions: 206 - 208, 1:30 pm - 3:30 pm, Tucson Ballrooms E/F**	
	Presentation of the Harold C. Urey Prize and the Carl Sagan Medal, 1:30 pm - 1:45 pm	
	206 Harold C. Urey Prize: After Imbrium, Before Babylon: Solar System's Middle Years, Matija Cuk (SETI), 1:45 pm - 2:20 pm	
	207 Science from the Lunar Atmosphere and Dust Environment Explorer Mission, Richard Elphic (NASA Ames Research Center), 2:20 pm - 2:55 pm	
	208 The Moon in the UV, Amanda Hendrix (Planetary Science Institute), 2:55 pm - 3:30 pm	
3:30 pm	**Poster Session, 3:30 pm - 6:00 pm, Starr Circle Pavilion and Arizona Ballroom**	
	209 Comets Posters	**212** Education Posters
	210 Exoplanet Posters	**213** Asteroids Physical Characterization Posters: NEAs
	211 Titan Posters	**214** Future Missions Posters
	Workshop: IOPW - Planetary Atmospheres Node Workshop, 3:30 pm - 5:00 pm, Arizona Ballroom 1-4	
7:00 pm	Planetary Science Institute Open House, 7:00 pm - 10:00 pm	

Wednesday, 12 November 2014	
7:15 am	Session Chair Breakfast, 7:15 am - 8:00 am, Tucson Ballroom J
7:30 am	Speaker Ready Room, 7:30 am - 4:00 pm, Tucson Ballroom D
8:00 am	Registration, 8:00 am - 4:00 pm, Starr Circle Foyer
8:30 am	**Oral Sessions 300-302, 8:30 am - 10:00 am**
	300 Mars Atmosphere 1, Tucson Ballrooms E/F
	301 Exoplanet Theories and Predictions, Arizona Ballroom 7
	302 Venus, Arizona Ballrooms 11/12
9:00 am	Exhibits, 9:00 am - 6:00 pm, Starr Circle Pavilion and Arizona Foyer
	Cyber Café, 9:00 am - 6:00 pm, Starr Circle Pavilion
	Art Show, 9:00 am - 6:00 pm, Arizona Ballroom 5
10:00 am	Coffee Break, 10:00 am - 10:30 am, Starr Circle Pavilion and Arizona Foyer
10:30 am	**Oral Sessions 303-306, 10:30 am - 12:00 pm**
	303 Mars Atmosphere 2, Tucson Ballrooms E/F
	304 Asteroid Small Bodies, Arizona Ballroom 7
	305 Laboratory Astrophysics , (10:30 am - 11:10 am)
	306 Moon/Mercury/Mars Exospheres (11:10 am - 12:00 pm) Arizona Ballrooms 11/12
12:00 pm	Lunch Break, 12:00 pm - 1:30 pm
	Workshop: DPS Advocacy Activities: Update and Context, 12:00 pm - 1:00 pm, Arizona Ballrooms 1-4
	Press Conference, 12:00 pm - 1:30 pm, Tucson Ballroom B
1:00 pm	DPS Business Meeting, 1:00 pm - 2:30 pm, Arizona Ballrooms 1-4
3:30 pm	DPS Reception, 3:30 pm - 6:00 pm, Arizona-Sonora Desert Museum
6:00 pm	DPS Banquet, 6:00 pm - 9:30 pm, Arizona-Sonora Desert Museum
Thursday, 13 November 2014	
7:15 am	Session Chair Breakfast, 7:15 am - 8:00 am, Tucson Ballroom J
7:30 am	Speaker Ready Room, 7:30 am - 4:00 pm, Tucson Ballroom D
8:00 am	Registration, 8:00 am - 4:00 pm, Starr Circle Foyer
8:30 am	**Oral Sessions 400-402, 8:30 am - 10:00 am**
	400 Asteroids: Dynamics and Collisions Tucson Ballrooms E/F
	401 Pluto 1: Mostly Atmosphere Arizona Ballroom 7
	402 Planetary Rings Arizona Ballrooms 11/12
9:00 am	Exhibits, 9:00 am - 6:00 pm, Starr Circle Pavilion and Arizona Foyer
	Cyber Café, 9:00 am - 6:00 pm, Starr Circle Pavilion
	Art Show, 9:00 am - 6:00 pm, Arizona Ballroom 5

SCHEDULE AT-A-GLANCE

Thursday, 13 November 2014 (continued)		
10:00 am	Coffee Break, 10:00 am -10:30 am, Starr Circle Pavilion and Arizona Foyer	
10:30 am	**Oral Sessions 403-405, 10:30 am - 12:00 pm**	
	403 Near Earth Asteroids Dynamics, Tucson Ballrooms E/F	
	404 Pluto 2: Mostly Surface, Arizona Ballroom 7	
	405 Active Icy Worlds, Arizona Ballrooms 11/12	
12:00 pm	Lunch Break, 12:00 pm - 1:30 pm	
	Press Conference, 12:00 pm - 1:30 pm, Tucson Ballroom B	
	Workshop: NRAO Community Event, 12:00 pm - 1:00 pm, Tucson Ballroom G	
	406 OPAG Town Hall, 12:00 pm - 1:30 pm, Arizona Ballroom 1-4	
1:30 pm	**Plenary Sessions: 407-408, 1:30 pm - 2:40 pm, Tucson Ballrooms E/F**	
	Presentation of the Harold Masursky Award and the Jonathan Eberhart Planetary Sciences Journalism Award, 1:30 pm - 1:45 pm	
	407 What's Going on Around the Outer Planets? A Report on Recent Ring Research, Matthew Hedman (University of Idaho), 1:45 pm - 2:20 pm	
	408 Dense and Narrow Rings Around the Centaur Object (10199) Chariklo, Bruno Sicardy (Observatoire de Paris), 2:20 pm - 2:40 pm	
2:40 pm	Coffee Break, 2:40 pm - 3:00 pm, Starr Circle Pavilion and Arizona Foyer	
3:00 pm	**Oral Sessions 409 - 411, 3:00 pm - 4:00 pm**	
	409 Asteroid Physical Characterization 1: Close Encounters Tucson Ballrooms E/F	
	410 Origins of Planetary Systems 1, Arizona Ballroom 7	
	411 Io, Jupiter's Volcanic Wonderland, Arizona Ballrooms 11/12	
4:00 pm	**Poster Session, 4:00 pm - 6:00 pm, Starr Circle Pavilion and Arizona Ballroom**	
	412 Mars Atmosphere Posters	**418** Outer Solar System Satellites Posters
	413 Mars Surface/Moon Posters	**419** Pluto Posters
	414 Asteroid Observations and Modeling Posters	**420** Origins of Planetary Systems Posters
	415 Asteroid Physical Characterization Posters: Main Belt	**421** TNOs and Centaurs Posters
	416 Venus Posters	**422** Jovian Planets Posters
	417 Planetary Rings Posters	
7:00 pm	**Sagan Lecture Public Talk:** Discarded Worlds: Astronomical Ideas That Were Almost Correct…, Guy Consolmagno, 7:00 pm - 8:00 pm, Centennial Hall, University of Arizona	

Friday, 14 November 2014	
7:15 am	Session Chair Breakfast, 7:15 am - 8:00 am, Tucson Ballroom J
7:30 am	Speaker Ready Room, 7:30 am - 4:00 pm, Tucson Ballroom D
8:00 am	Registration, 8:00 am - 12:00 pm, Starr Circle Foyer
8:30 am	**Oral Sessions 500-502, 8:30 am - 10:00 am**
	500 Asteroids Physical Characterization 2: Vesta and Ceres Tucson Ballrooms E/F
	501 Origins of Planetary Systems 2, Arizona Ballroom 7
	502 Icy Satellites Potpourri Arizona Ballrooms 11/12
9:00 am	Exhibits, 9:00 am - 3:30 pm, Starr Circle Pavilion and Arizona Foyer
	Cyber Café, 9:00 am - 3:30 pm, Starr Circle Pavilion
	Art Show, 9:00 am - 3:30 pm, Arizona Ballroom 5
10:00 am	Coffee Break, 10:00 am - 10:30 am, Starr Circle Pavilion and Arizona Foyer
10:30 am	**Oral Sessions 502-505, 10:30 am - 12:00 pm**
	503 Asteroid Physical Characterization 3: NEAs, Active Asteroids, and Simulations, Tucson Ballrooms E/F
	504 Origins of Planetary Systems 3, Arizona Ballroom 7
	505 Uranus, Neptune, and Giant Planet Interiors from Juno and Cassini, Arizona Ballrooms 11/12
12:00 pm	Lunch Break, 12:00 pm - 1:30 pm
1:30 pm	**Oral Sessions 506-508, 1:30 pm -3:00 pm**
	506 Asteroid Physical Characterization 4: Colors and Composition Tucson Ballrooms E/F
	507 TNOs and Centaurs: Populations and Dynamics Arizona Ballroom 7
	508 Saturn Poles and Stratosphere, Arizona Ballrooms 11/12
3:00 pm	Coffee Break, 3:00 pm -3:30 pm, Starr Circle Pavilion and Arizona Foyer
3:30 pm	**Oral Sessions 509-511, 3:30 pm - 5:00 pm**
	509 Asteroid Physical Characterization 5 (until 5:30pm) Tucson Ballrooms E/F
	510 TNOs and Centaurs: Characterization, Arizona Ballroom 7
	511 Jupiter and Saturn Atmospheric Structure and Clouds Arizona Ballrooms 11/12
5:00 pm	**Oral Session 512, 5:00 pm - 5:30 pm**
	512 Jupiter and Saturn Composition, Arizona Ballrooms 11/12

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 wear your AAS identification badge at all times during the meeting.
- Do obey the "golden rule," i.e., treat others as you would have them treat you.
- Do not hog wireless bandwidth; use the AAS wireless service sparingly.
- Do be quiet during presentations; use computers and mobile devices discretely.
- Do silence all cell phones and other electronic devices with audible alerts.
- Do not blog, tweet, or otherwise post private conversations online.
- 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.

General Considerations

Meetings of the American Astronomical Society are not public events. All attendees must register at the applicable rate; registration types are structured to cover all situations. The only exceptions involve sessions or other activities specifically noted as being open to the public, such as public talks or star parties held in collaboration with local amateur astronomers.

Identification badges must be worn at all times during the meeting. These badges help meeting attendees, AAS staff, and security personnel identify registered participants. Attendees not wearing their name badges will be denied entrance to session rooms, the exhibit hall, and other meeting venues. If you lose your name badge, visit the AAS registration desk to obtain a new one. Note that the design of AAS meeting badges changes regularly to prevent the inappropriate reuse of old badges.

Attendance at AAS meetings is not a right but a privilege, and attendees are expected to behave professionally. The AAS is committed to providing an atmosphere that encourages the free expression and exchange of scientific ideas. The AAS is further 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. It is AAS policy that all participants in Society activities will enjoy an environment free from all forms of discrimination, harassment, and retaliation. 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/policies/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 and other services, and with professional

hotel and convention-center staff as well. The AAS retains security services, sometimes through the meeting venue and sometimes privately, to ensure the safety and security of all meeting attendees and exhibitors. Help us ensure a safe, secure, and professional environment by acting appropriately, reporting inappropriate behavior, and paying attention to those around you and your environment.

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 and may have their registration rescinded without refund. In extreme cases, the AAS may call law-enforcement authorities and/or pursue legal action.

Note that all sessions except those marked "private" by the AAS are open to all registered attendees, including scientists, educators, students, journalists, and guests. All are due the same level of professional respect and courtesy. Only with your help can we ensure the most productive scientific conference.

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.

Mobile Phones & Related Devices

Cell phones, tablets, 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.

A GUIDE TO AAS MEETING ETIQUETTE

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 is on their minds without fear of having an unscripted remark or a partially baked idea zapped into cyberspace. Think of it as common courtesy."

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/aas-speaker-ready-and-audio-visual-information). All oral presentations must be uploaded to the internal network in the Speaker Ready Room. Personal laptops and USB 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. He or she is empowered to stop questioning and to rearrange or otherwise adjust time slots (or not) based on tardiness or non-attendance of a scheduled speaker. The chair cannot extend talk times beyond the common limits of 10 minutes for regular contributions and 20 minutes for dissertation contributions (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.

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 cost the AAS money and increase 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.

A Special Thank You To Our Abstract Sorters

Nadine Barlow
Jason Barnes
Veronica Bray
Melissa Brucker
Matija Cuk
Adrienne Dove
Murthy Gudipati
Joe Harrington
Susan Lederer
Louis Mayo
Jay Pasachoff
Vishnu Reddy
Alyssa Rhoden
Adam Showman
John Spencer
Andrew Steffl
Matthew Tiscareno
Faith Vilas
Paul Withers

SUNDAY, 9 NOVEMBER 2014

AAS/DPS Astronomy Ambassadors Outreach Workshop

Sunday, 8:00 am - 5:00 pm; Tucson Ballroom I

Are you excited about what you do and want to gain some skills in sharing that enthusiasm with the public? Do you wonder why they look at you blankly when you discuss small-scale structure of the plasma convection and electron content within the subauroral polarization stream? This workshop is an opportunity to gain some basic communication skills for bringing your research to the public, to discover great resources for outreach activities, and network with others motivated to make outreach an integral part of their professional identity.
Chair(s): Suzanne Gurton *(Astronomical Society of the Pacific)*

Using Planetary Science in K-12 Classrooms

Sunday, 8:00 am - 5:00 pm; Tucson Ballroom H

We will be working with a group of local K-12 teachers to help them learn how to utilize astronomy and planetary science concepts in their classrooms.
Organizer(s): Sarah Horst *(University of Colorado)*

Scientific Opportunities in Cislunar Space (SOCS)

Sunday, 8:15 am - 4:45 pm; Tucson Ballroom G

This one day workshop will focus on what can we learn in cislunar space that illuminates relevant processes in our Solar system and planetary systems throughout the galaxy. MiniMoons and Neo's Morning will focus on NEO's and "mini-Moons" that transit and may become temporarily trapped in cislunar space. They are accusable to direct observation and interaction. We can learn from these nearby objects critical processes for airless bodies throughout the Solar system and applicable to other star systems and planetary disks. Cryogenic Planetary Science and Astrobiology There are many active terrains that operate at cryogenic temperatures below 100K. Many of these terrains may shelter (or even contain) astrobiologically active habitats that my provide evidence or clues to life in the Solar system and the Universe. The Lunar poles have a wide variety of terrains below 100K (measured down to 25K). At Cabeus, the regolith was "fluffy" and contained 15% weight volatiles. One could find, or create, powerful analog sites and systems that can illuminate the processes that dominate planetary terrains throughout the Universe. Low Cost, Rapid Deployment Planetary Science Of particular interest is the fact that planetary science in cislunar space can be done much faster and at much lower cost. The goal will always be to go to distant destinations and sample the terrain and astrobiology directly. But the simple fact is that planetary science in cislunar space will always be orders of magnitude cheaper and years faster than deep space missions. If you would like to do "real" science in your carrier, consider designing and flying a LunarCube analog mission. Explore the possibilities by joining us at Scientific Opportunities in Cislunar Space (SOCS) the Sunday before DPS in Tucson. Partners and participants include : SSRERVI, SETI, JPL, KSC and more.
Organizer(s): Russell Cox

NASA Proposal Writing Workshop

Sunday, 12:00 pm - 5:00 pm; Arizona Ballroom 11/12

At some time in your career as a scientist, you will need to obtain funding to conduct your research. Perhaps that time is now, perhaps it is still a few years away, but that time will come. Are you prepared for it? Fortunately, NASA awards funding every year for research like yours. But even in the best of times NASA selects only one out of every three proposals submitted for funding. Proposal writing is a necessary skill for every scientist, and just like the rest of your skills it needs to be developed. The session will be presented by Dr. Curt Niebur, a program scientist at NASA HQ, and will focus on understanding NASA's research programs and will include information on how to write a research proposal, where to apply for funding, and pathways for participation on missions.
Organizer(s): Curt Niebur *(NASA Headquarters)*

Become a Media-Savvy Planetary Scientist

Sunday, 1:00 pm - 5:00 pm; San Pedro

One of the great things about working in planetary science is that the press and public are keenly interested in what we do. That's the good news. The bad news is that few of us receive any training, in our education or on the job, in how to communicate effectively with the press and public. To help fill the gap between expectations and preparation ? and to help you avoid panic if a reporter calls ? AAS Press Officer Rick Fienberg and DPS Press Officer Vishnu Reddy have organized a half-day media-training workshop for planetary scientists. Topics include what makes a science story newsworthy, how press releases are created and distributed, what do to if you think you have a newsworthy result worth publicizing, how to work with the public-information officers (PIOs) at your institution and funding agencies, how to prepare for a press conference, how to describe your research in pithy yet accurate terms, and tips for surviving your first on-camera interview. Presenters include PIOs Alan Fischer (Planetary Science Institute), Daniel Stolte (University of Arizona), and Scott Kardel (International Dark-Sky Association); journalist-bloggers Tom Beal (Arizona Daily Star) and Emily Lakdawalla (The Planetary Society); and communications and career consultant Alaina Levine (Quantum Success Solutions).
Organizer(s): Rick Fienberg *(AAS)*

SUNDAY, 9 NOVEMBER 2014

JWST Workshop on Potential Science Investigations

Sunday, 1:00 pm - 4:00 pm; Arizona Ballroom 9

The Science Working Group of the James Webb Space Telescope (JWST) has a dedicated effort to establish the scientific capabilities of this facility for Solar System Science; a new white paper provides a general overview and preliminary case studies (http://www.stsci.edu/jwst/doc-archive/white-papers). In order to fully realize the potential of JWST for Solar System observations, we have recently organized 10 focus groups including: Asteroids, Comets, Giant Planets, Mars, Near Earth Objects, Occultations, Rings, Satellites, Titan, and Trans-Neptunian Objects, to explore various science use cases in more detail. The findings from these groups will help guide the project as it develops and implements planning tools, observing templates, and data pipeline and archive so that they enable a broad range of Solar System Science investigations. This workshop will consist of: 1) Presentations of findings from the focus groups, and 2) Discussion with the broader community to identify gaps in the focus-group science use cases and in envisioned observatory capabilities. These outputs from the workshop will be used to inform ongoing development and pre-launch operational studies. More information on Solar System observations with JWST and other observatory capabilities can be found in http://www.stsci.edu/jwst/science/solar-system.
Organizer(s): Stefanie Milam *(NASA Goddard Space Flight Center)*

Solar System Challenges: Citizen Science

Sunday, 2:00 pm - 4:30 pm; Arizona Ballroom 8

Following the 2009 "Strategy for American Innovation," NASA's Planetary Science has engaged with the NASA Tournament Lab (NTL) to provide unique tools for exploring and using data from NASA's planetary missions. This approach is illustrated by Challenges launched by both the Planetary Data System (PDS) and the Lunar Mapping and Modeling Portal (LMMP) presented at the workshop. We are searching for new ways to use Challenges to develop tools and applications for the Planetary Science Community using the Challenge methodology that we present in the workshop. Representatives on NTL, PDS and LMMP will be available to work with those interested in the use of this approach for rapid development and utilization of NTL.
Organizer(s): Thomas Morgan *(NASA/GSFC)*

How to Be a PI: Project Management & Leadership

Sunday, 2:30 pm - 4:30 pm; Tucson Ballroom J

This two-hour workshop, hosted by the DPS Professional Development subcommittee, will inform and train participants in aspects of project management and leadership, with content tailored specifically for planetary scientists. Workshop is open to all levels: students through professionals. Participants will learn the roles and responsibilities of different categories of principal investigators and project scientists. Topics including fiscal and resource management, personnel supervision and effective leadership, and time management for maximizing science return will be discussed.
Organizer(s): Karly Pitman *(Planetary Science Institute)*

100 Rosetta 1

Monday, 8:30 am - 10:00 am; Tucson Ballroom E/F

Chair(s): Michael Kelley *(Univ. of Maryland)* **&**
Beatrice Mueller *(Planetary Science Institute)*

100.01 Comet 67P/Churyumov-Gerasimenko: First science results by Rosetta/OSIRIS
Author(s): Nicolas Thomas[24], Holger Sierks[1], Cesare Barbieri[3, 26], Philippe Lamy[2], Rafael Rodrigo[6], Detlef Koschny[4], Hans Rickman[5, 25], Jessica Agarwal[1], Michael A'Hearn[7], Francesco Angrilli[8, 26], Antonella Barucci[9], Jean-Loup Bertaux[10], Ivano Bertini[26], Sebastien Besse[4], Dennis Bodewits[7], Claire Capanna[2], Gabriele Cremonese[12, 26], Vania Da Deppo[13, 26], Björn Davidsson[5], Stefano Debei[8, 26], Mariolino De Cecco[14], Francesca Ferri[26], Sonia Fornasier[9], Marco Fulle[15], Robert Gaskell[16], Olivier Groussin[2], Carsten Güttler[1], Pedroj Gutierrez[6], Stubbe Hviid[19], Wing-Huen Ip[17, 27], Laurent Jorda[1], Horst Uwe Keller[18], Jörg Knollenberg[19], Rainer Kramm[1], Ekkehard Kührt[19], Michael Küppers[11], Fiorangela LaForgia[26], Luisa Lara[6], Monica Lazzarin[3], Cedric Leyrat[9], Jose Juan Lopez Moreno[6], Stephen Lowry[28], Sara Magrin[3], Simone Marchi[26], Francesco Marzari[20, 26], Harald Michalik[21], Stefano Mottola[19], Giampiero Naletto[22, 26], Nilda Oklay[1], Maurizio Pajola[3], Lola Sabau[23], Colin Snodgrass[1], Cecilia Tubiana[1], Jean-Baptiste Vincent[1], Peter Wenzel[4]

Institution(s): *[1.] Max-Planck-Institut für Sonnensystemforschung, Göttingen, Germany. [2.] Laboratoire d'Astrophysique de Marseille, Marseille, France. [3.] University of Padova, Department of Astronomy, Padova, Italy. [4.] Research and Scientific Support Department, European Space Agency, Noordwijk, Netherlands. [5.] Department of Physics and Astronomy, Uppsala University, Uppsala, Sweden. [6.] Instituto de Astrofísica de Andalucía, Granada, Spain. [7.] Department of Astronomy, University of Maryland, Maryland, MD. [8.] Department of Mechanical Engineering, University of Padova, Padova, Italy. [9.] LESIA, Observatoire de Paris, Meudon, France. [10.] LATMOS, CNRS/UVSQ/IPSL, Guyancourt, France. [11.] European Space Astronomy Centre, European Space Agency, Madrid, Spain. [12.] INAF - Osservatorio Astronomico di Padova, Padova, Italy. [13.] CNR-IFN UOS Padova LUXOR, Padova, Italy. [14.] UNITN, Università di Trento, Trento, Italy. [15.] Osservatorio Astronomico de Trieste, Trieste, Italy. [16.] Planetary Science Institute, Tucson, AZ. [17.] Institute of Astronomy, National Central University, Chung-Li, Taiwan. [18.] Institute for Geophysics and Extraterrestrial Physics, TU Braunschweig, Braunschweig, Germany. [19.] Institut für Planetenforschung, DLR, Berlin, Germany. [20.] Department of Physics - University of Padova, Padova, Italy. [21.] Institut für Datentechnik und Kommunikationsnetze, Braunschweig, Germany. [22.] Department of Information Engineering, University of Padova, Padova, Italy. [23.] Instituto Nacional de Técnica Aeroespacial, Torrejon de Ardoz, Spain. [24.] Physikalisches Institut, Universität Bern, Bern, Bern, Switzerland. [25.] PAS Space Research Center,, Warsaw, Poland. [26.] Centro di Ateneo di Studi e Attività Spazialei "Giuseppe Colombo" (CISAS), Padova, Italy. [27.] Space Science Institute, Macau University of Science and Technology, Macao, Macao. [28.] Centre for Astrophysics and Planetary Science, University of Kent, Canterbury, United Kingdom.*

100.02 Albedo and color variegations on 67/P Churyumov-Gerasimenko as observed by OSIRIS/Rosetta

Author(s): Cedric Leyrat[1], Maria Antonietta Barucci[1], Sonia Fornasier[1], Holger Sierks[2], Pedro Hasselmann[1], Sebastien Besse[7], Nilda Oklay[2], Laurent Jorda[3], Cesare Barbieri[8], Philippe Lamy[3], Detlef Koschny[8], Sara Magrin[8], Ivano Bertini[8], Fiorangela La Forgia[8], Michael A'Hearn[2], Jean Loup Bertaux[10], Bjorn Davidsson[9], Marco Fulle[8], Olivier Groussin[3], Pablo Gutierrez[2], Stubbe Hviid[4], Horst Uwe Keller[4], Michael Kueppers[7], Monica Lazzarin[8], Ekkehard Kuehrt[4], Luisa Lara[5], Nicolas Thomas[6], Jean-Baptiste Vincent[2], Maurizio Pajola[8]

Institution(s): *[1.] LESIA - Observatoire de Paris, Meudon, France. [2.] Max-Planck Institute for Solar System Research, Goettingen, Germany. [3.] Laboratoire d'Astrophysique de Marseille, Marseille, France. [4.] German Aerospace Center (DLR), Berlin, Germany. [5.] Instituto de Astrofisica de Andalucia, Granada, Spain. [6.] University of Bern, Bern, Switzerland. [7.] ESA, Noordwijk, Netherlands. [8.] University of Padua, Padova, Italy. [9.] University of Uppsala, UPPSALA, Sweden. [10.] LATMOS, Guyancourt, France.*

Contributing team(s): OSIRIS Team

100.03 The Strength of Comet 67P/Churyumov–Gerasimenko

Author(s): Timothy J. Bowling[1], Jordan Steckloff[1], Kevin Graves[1], H. Jay Melosh[1]

Institution(s): *[1.] Earth Atmospheric and Planetary Sciences, Purdue University, West Lafayette, IN.*

100.04 Millimeter and Submillimeter Observations of comet 67P/C-G with the MIRO Instrument

Author(s): Mark D. Hofstadter[1], Mark Allen[1], Paul von Allmen[1], Gerard Beaudin[2], Nicolas Biver[2], Dominique Bockelee-Morvan[2], Mathieu Choukroun[1], Jacques Crovisier[2], Pierre Encrenaz[2], Therese Encrenaz[2], Margaret Frerking[1], Samuel Gulkis[1], Paul Hartogh[3], Wing Ip[4], Michael Janssen[1], Christopher Jarchow[3], Lucas Kamp[1], Stephen Keihm[1], Seungwon Lee[1], Emmanuel Lellouch[2], Cedric Leyrat[2], Ladislav Rezac[3], Frederick P. Schloerb[5], Thomas Spilker[6]

Institution(s): *[1.] JPL, Pasadena, CA. [2.] Observatory of Paris, Meudon, France. [3.] Max Planck Institute, Göttingen, Germany. [4.] Institute of Astronomy and Space Science, Jhongli, Taiwan. [5.] University of Massachusetts, Amherst, MA. [6.] Solar System Science and Exploration, Monrovia, CA.*

100.05 Evolution of H2O coma of comet 67P/Churuymov-Gerasimenko observed from the Microwave Instrument on the Rosetta Orbiter (MIRO)

Author(s): Seungwon Lee[1], N. Biver[2], L. Rezac[3], P. von Allmen[1], M. Allen1, G. Beaudin[2], D. Bockelee-Morvan[2], M. Choukroun[1], J. Crovisier[2], P. Encrenaz[2], T. Encrenaz[2], M. Frerking[1], S. Gulkis[1], P. Hartough[3], M. Hofstadter[1], W. Ip[4], M. Janssen[1], C. Jarchow[3], S. Keihm[1], E. Lellouch[2], C. Leyrat[2], F. Schloerb[5], T. Spilker[1]

Institution(s): *[1.] Jet Propulsion Laboratory, Pasadena, CA. [2.] Observatoire de Paris-Meudon, Meudon, France. [3.] Max-Planck Institute for Solar System Research, Gottingen, Germany. [4.] National Central University, Jhongli, Taiwan. [5.] University of Massachusetts, Amherst, MA.*

100.06 Inhomogeneity in composition and surface morphology implied from continuum observations of 67P/Churyumov-Gerasimenko with Microwave Instrument on the Rosetta Orbiter (MIRO)

Author(s): Paul Von Allmen[1], Mark Allen[1], Gérard Beaudin[2], Nicolas Biver[2], Dominique Bockelée-Morvan[2], Mathieu Choukroun[1], Jacques Crovisier[2], Pierre Encrenaz[2], Thérèse Encrenaz[2], Margaret Frerking[1], Samuel Gulkis[1], Paul Hartough[3], Mark Hofstadter[1], Wing Ip[4], Michael Janssen[1], Christopher Jarchow[3], Stephen Keihm[1], Emanuel Lellouch[2], Cédric Leyrat[3], Ladislav Rezac[3], Peter Schloerb[5], Thomas Spilker[1]

Institution(s): *[1.] Jet Propulsion Laboratory, Pasadena, CA. [2.] Observatoire de Paris-Meudon, Meudon, France. [3.] Max Planck Institute for Solar SystemResearch, Göttingen, Germany. [4.] National Central University, Jhongli, Taiwan. [5.] University of Massachusetts, Amherst, MA.*

100.07 First Far-Ultraviolet Observations of a Comet Nucleus: Rosetta-Alice Reflectance Spectroscopy of 67P/Churyumov-Gerasimenko

Author(s): S. A. Stern[1], Lori Feaga[2], Joel Parker[1], Andrew Steffl[1], Eric Schindhelm[1], Mike A'Hearn[2], Paul Feldman[5], Hal Weaver[3], Jean-Loup Bertaux[6], Mike Davis[4]

Institution(s): *[1.] SwRI, Boulder, CO. [2.] U. Md, College Park, MD. [3.] JHUAPL, Columbia, MD. [4.] SwRI, San Antonio, TX. [5.] Johns Hpokins University, Baltimore, MD. [6.] LATMOS, Paris, France.*

100.08 Spatially Resolved Far-Ultraviolet Surface Reflectance of Comet 67P/ Churyumov-Gerasimenko as Observed by Rosetta Alice

Author(s): Lori M. Feaga[1], S Alan Stern[2], Michael F. A'Hearn[1], Jean-Loup Bertaux[3], Paul D. Feldman[4], Joel W. Parker[2], Eric Schindhelm[2], Andrew J. Steffl[2], Harold A. Weaver[5], Silvia Protopapa[1]

Institution(s): *[1.] Univ. of Maryland, College Park, MD. [2.] Southwest Research Institute, Boulder, CO. [3.] University of Versailles Saint-Quentin en Yvelines, Versailles, France. [4.] Johns Hopkins University, Baltimore, MD. [5.] Johns Hopkins University Applied Physics Laboratory, Laurel, MD.*

100.09 Measurement of the Gas Environment in the Inner Coma of Comet 67P/ Churyumov-Gerasimenko with the Alice Far-ultraviolet Spectrograph on Rosetta

Author(s): Paul D. Feldman[1], Michael F. A'Hearn[2], Jean-Loup Bertaux[3], Lori M. Feaga[2], Joel W. Parker[4], Eric Schindhelm[4], Andrew J. Steffl[4], S. A. Stern[4], Harold A. Weaver[5]

Institution(s): *[1.] Johns Hopkins Univ., Baltimore, MD. [2.] University of Maryland, College Park, MD. [3.] LATMOS, CNRS/UVSQ/IPSL, Guyancourt, France. [4.] Southwest Research Institute, Boulder, CO. [5.] JHU Applied Physics Laboratory, Laurel, MD.*

MONDAY, 10 NOVEMBER 2014

101 Exoplanet Atmosphere Theory

Monday, 8:30 am - 10:00 am; Arizona Ballroom 7

Chair(s): Statia Luszcz-Cook *(University of California)* **& Björn Benneke** *(Caltech)*

101.01D Non-grey thermal effects in irradiated planets atmospheres
Author(s): Vivien Parmentier[1, 4], Tristan Guillot[1], Jonathan J. Fortney[2], Mark S. Marley[3]
Institution(s): *[1.] Observatoire de la Côte d'Azur, Nice, France, France. [2.] UCSC, Santa-Cruz, CA. [3.] NASA Ames, Mountain view, CA. [4.] UCSC NASA Sagan Fellow, Santa-Cruz, CA.*

101.02 A radiative-convective equilibrium model for young giant exoplanets: studies of ? pictoris b and HD95086 b
Author(s): Jean-Loup Baudino[1], Bruno Bézard[1], Anthony Boccaletti[1], Mickaël Bonnefoy[2], Anne-Marie Lagrange[2], Raphaël Galicher[1]
Institution(s): *[1.] LESIA, Observatoire de Paris, Meudon, France. [2.] IPAG, UJF-Grenoble 1, Grenoble, France.*

101.03 Magnetic Effects on Hot Exoplanet Atmospheres
Author(s): Konstantin Batygin[1], Sabine Stanley[2], David J. Stevenson[1]
Institution(s): *[1.] California Institute of Technology, Pasadena, CA. [2.] University of Toronto, Toronto, ON, Canada.*

101.04 Effects of Magnetism on the Atmospheres and Evolution of Hot Jupiters
Author(s): Thaddeus D. Komacek[1], Tamara M. Rogers[1], Travis S. Barman[1], Adam P. Showman[1], Andrew N. Youdin[2]
Institution(s): *[1.] Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ. [2.] Steward Observatory, University of Arizona, Tucson, AZ.*

101.05 Electron densities and alkali atoms in exoplanet atmospheres
Author(s): Panayotis Lavvas[1], Tommi Koskinen[2], Roger Yelle[2]
Institution(s): *[1.] GSMA, Universite de Reims, Reims, France. [2.] University of Arizona, Tucson, AZ.*

101.06 Effect of condensate cycles in driving atmospheric circulation on brown dwarfs and directly imaged giant planets
Author(s): Xianyu Tan[1], Adam Showman[1]
Institution(s): *[1.] University of Arizona, Tucson, AZ.*

101.07 Effects of bulk composition on the atmospheric dynamics on close-in exoplanets
Author(s): Xi Zhang[1], Adam P. Showman[1]
Institution(s): *[1.] University of Arizona, Tucson, AZ.*

101.08 Atmospheric Dynamics of Terrestrial Exoplanets Over a Wide Range of Orbital and Atmospheric Parameters
Author(s): Yohai Kaspi[1], Adam P. Showman[2]
Institution(s): *[1.] Earth and Planetary Sciences, Weizmann Institute of Science, Rehovot, Israel. [2.] University of Arizona, Tucson, AZ.*

101.09 A theoretical study of polarization in scattered light from planetary and exoplanetary atmospheres
Author(s): Pushkar Kopparla[1], Vijay Natraj[2], Yuk L. Yung[1]
Institution(s): *[1.] Planetary Science, California Institute of Technology, Pasadena, CA. [2.] Jet Propulsion Laboratory, Pasadena, CA.*

102 Titan 1: Atmosphere Structure and Time Variability

Monday, 8:30 am - 10:00 am; Arizona Ballroom 11/ 12

Chair(s): Mate Adamkovics *(University of California, Berkeley)* **& Veronique Vuitton** *(CNRS)*

102.01 Using The Cassini-UVIS Instrument As An Imager To Quantify The Interactions Between Saturn's Magnetosphere And Titan's Upper Atmosphere
Author(s): Emilie M. Royer[1], Larry W. Esposito[1], Kristopher Larsen[1], Michael H. Stevens[3], Joseph M. Ajello[2, 1], Robert A. West[2]
Institution(s): *[1.] University of Colorado - LASP, Boulder, CO. [2.] JPL, Pasadena, CA. [3.] Naval Research Laboratory, Washington, DC.*

102.02 N2 and CH4 Densities Retrieved from Dayglow and Occultation Observations of Titan's Upper Atmosphere
Author(s): Michael H. Stevens[1], Tommi Koskinen[2], Scott Evans[3], Robert West[4]
Institution(s): *[1.] NRL, Washington, DC. [2.] University of Arizona, Tucson, AZ. [3.] Computational Physics, Inc., Springfield, VA. [4.] NASA/JPL, Pasadena, CA.*

102.03 Model observed tholin profiles in the atmosphere of Titan
Author(s): Mao-Chang Liang[1, 2], Joshua Kammer[3], Xi Zhang[4], Donald Shemansky[5], Yuk L. Yung[3]
Institution(s): *[1.] U. Houston, Houston, TX. [2.] Academia Sinica, Taipei, Taiwan. [3.] Caltech, pasadena, CA. [4.] U. Arizona, Tucson, AZ. [5.] Space Environment Technologies, Altadena, CA.*

102.04 Planetary Ageostrophic Instability Leads to Superrotation
Author(s): Jonathan L. Mitchell[1], Peng Wang[1]
Institution(s): *1. UCLA, Los Angeles, CA.*

102.05 Mapping variations in Titan's atmospheric HNC and HC3N distributions using ALMA
Author(s): Martin Cordiner[1, 5], Conor Nixon[1], Nick Teanby[2], Serigano Joe[1], Steve Charnley[1], Stefanie Milam[1], Pat Irwin[3], Michael J. Mumma[1], Geronimo Villanueva[1, 5], Lucas Paganini[1, 5], Yi-Jehng Kuan[4]
Institution(s): *[1.] NASA Goddard Space Flight Center, Greenbelt, MD. [2.] Bristol University, Bristol, United Kingdom. [3.] University of Oxford, Oxford, United Kingdom. [4.] National Taiwan Normal University, Taipei, Taiwan. [5.] Catholic University of America, Washington, DC.*

MONDAY, 10 NOVEMBER 2014

102.06 Titan's South Pole Temporal Evolution of HC3N and other trace gases
Author(s): Athena Coustenis[1], Conor Nixon[2], Donald Jennings[2], Georgios Bampasidis[1, 3], Richard Achterberg[2, 4], Panayotis Lavvas[5], Nick Teanby[6], Gordon Bjoraker[2], Michael Flasar[2]
Institution(s): [1.] LESIA, Paris Observatory, Meudon, France. [2.] Goddard Space Flight Center, Greenbelt, MD. [3.] Faculty of Physics, National and Kapodistrian University of Athens, Athens, Greece. [4.] Department of Astronomy, University of Maryland, College Park, MD. [5.] GSMA, Université Reims Champagne-Ardenne, Reims, France. [6.] School of Earth Sciences, University of Bristol, Bristol, United Kingdom.

102.07 Post-equinox Variations of Titan's Mid-stratospheric Temperatures from Cassini/CIRS Observations
Author(s): Richard K. Achterberg[1, 3], Peter J. Gierasch[2], Barney J. Conrath[2], F Michael Flasar[3], Donald E. Jennings[3], Conor A. Nixon[3]
Institution(s): *[1.] University of Maryland, Greenbelt, MD. [2.] Cornell University, Ithaca, NY. [3.] NASA/GSFC, Greenbelt, MD.*

102.08 Titan's South Polar cloud optical properties modelization
Author(s): Daniel Toledo[1], Pascal Rannou[1], Robert A. West[2], Panayotis Lavvas[1]
Institution(s): *[1.] Université de Reims, Reims, France. [2.] Jet Propulsion Laboratory, California Institute of Technology , Pasadena, CA.*

102.09 Evolution of Titan's South Pole 220 cm-1 Ice Cloud
Author(s): Donald E. Jennings[1], Richard K. Achterberg[1, 2], Carrie M. Anderson[1], F. Michael Flasar[1], Remco de Kok[3], Athena Coustenis[4]
Institution(s): *[1.] Goddard Space Flight Center, Greenbelt, MD. [2.] University of Maryland, College Park, MD. [3.] SRON Netherlands Institute for Space Research, Utrecht, Netherlands. [4.] LESIA, Observatoire de Paris-Meudon, Meudon, France.*

103 Rosetta 2 / Comet Coma Chemistry and Nuclear Outbursts

Monday, 10:30 am - 12:00 pm; Tucson Ballroom E/F

Chair(s): Lori Feaga *(Univ. of Maryland)* **&**
Nicolas Fougere *(University of Michigan)*

103.01 VIRTIS-Rosetta observations of the nucleus of 67P/Churyumov-Gerasimenko during the Comet Characterisation phase (July-August 2014)
Author(s): Fabrizio Capaccioni[1], Gianrico Filacchione[1], Stephane Erard[2], Gabriele Arnold[3], Maria Teresa Capria[1], Maria Cristina De Sanctis[1], Dominique Bockelee-Morvan[2], Federico Tosi[1], Cedric Leyrat[2], Gian Paolo Tozzi[4], Pierre Drossart[2], Mauro Ciarniello[1], Andrea Raponi[1], Giuseppe Piccioni[1], Michelangelo Formisano[1], Bernard Schmitt[6], Alessandra Migliorini[1], Andrea Longobardo[1], Ernesto Palomba[1], Ekkehard Kuehrt[3], Enrico Flamini[5]

Institution(s): *[1.] INAF-IAPS, ROME, Italy. [2.] LESIA, Observatoire de Paris/CNRS/ UPMC/Univ. Paris-Diderot, Paris, France. [3.] DLR, Berlin, Germany. [4.] Osservatorio di Arcetri, Firenze, Italy. [5.] ASI, ROME, Italy. [6.] UJF-Grenoble 1 / CNRS-INSU, Institut de Planétologie et d'Astrophysique de Grenoble, Grenoble, France.*
Contributing team(s): VIRTIS Team

103.02 Thermal properties of comet 67P derived from Rosetta/VIRTIS, and orbital observations of Philae landing site

Author(s): Pierre Drossart[1], C. Leyrat[1], S. Erard1, M. T. Capria[2], F. Capaccioni[2], G. Filacchione[2], F. Tosi[2], M. C. De Sanctis[2], G. Arnold[3], K. Markus[4], D. Bockelée-Morvan[1], B. Schmitt[5], M. Formisano[2], E. Kuehrt[3]
Institution(s): *[1.] LESIA, Observatoire de Paris, Meudon, France. [2.] INAF-IAPS, Rome, Italy. [3.] DLR, Berlin, Germany. [4.] Institut für Planetologie, Westfälische Wilhelms-Univ. Münster, Munster, Germany. [5.] IPAG/CNRS/ Univ. Grenoble-Alpes, Grenoble, France.*
Contributing team(s): the Rosetta-VIRTIS team

103.03 Preliminary results seen with Rosetta/ROSINA: early cometary activity of 67P/ Churyumov-Gerasimenko

Author(s): Sebastien Gasc[1], Kathrin Altwegg[1, 2], Annette Jäckel[1], Martin Rubin[1], Chia-Yu Tzou[1], Peter Wurz[1], Björn Fiethe[3], Axel Korth[4], Henri Rème[5]
Institution(s): *[1.] Physics Institute, Space Research and Planetary Sciences, University of Bern, Bern, Switzerland. [2.] Center for Space and Habitability, University of Bern, Bern, Switzerland. [3.] Institute of Computer and Networking Engineering, Braunschweig, Germany. [4.] Max Planck Institute for Solar System Research, Göttingen, Germany. [5.] Research Institute in Astrophysics and Planetology, Toulouse, France.*
Contributing team(s): the ROSINA team

103.04 Early Activity of Cometary Species from ROSINA/DFMS at 67P/ Churyumov-Gerasimenko

Author(s): Myrtha Hässig[1], Stephen A. Fuselier[1], Kathrin Altwegg[2, 3], Hans Balsiger[2], Jean-Jacques Berthelier[4], André Bieler[5], Ursina Calmonte[2], Frederik Dhooghe[6], Björn Fiethe[7], Sébastien Gasc[2], Tamas I. Gombosi[5], Annette Jäckel[2], Axel Korth[8], Léna Le Roy[3], Henri Rème[9], Martin Rubin[2, 3], Chia-Yu Tzou[2], Peter Wurz[2]
Institution(s): *[1.] Southwest Research Institute, Space Science and Engineering, San Antonio, TX. [2.] Physikalisches Institut, Space Reasearch and Planetary Sciences, University of Bern, Bern, Switzerland. [3.] Center for Space and Habitability, University of Bern , Bern, Switzerland. [4.] LATMOS Laboratoire Atmosphères, Milieux, Observations Spatiales, Paris, France. [5.] University of Michigan, Ann Arbor, MI. [6.] Belgian Institute for Space Aeronomy, Brussels, Belgium. [7.] Technical University of Braunschweig, Braunschweig, Germany. [8.] Max Planck Institute for Solar System Research, Göttingen, Germany. [9.] IRAP, Toulouse, France.*
Contributing team(s): ROSINA team

103.05 Preliminary Inventory in the Early Coma of Comet 67P/ Churyumov-Gerasimenko
Author(s): Ursina Calmonte[1], Kathrin Altwegg[1], Léna Le Roy[2], Martin Rubin[2], Jean-Jacques Berthelier[3], Johan De Keyser[4], Björn Fiethe[5], Steve A Fuselier[6], Mike Combi[7]
Institution(s): *[1.] Space Research and Planetary Sciences, University of Bern, Bern, Switzerland. [2.] Center for Space and Habitability, University of Bern, Bern, Switzerland. [3.] LATMOS, Saint-Maur, France. [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. [7.] AOSS, University of Michigan, Ann Arbor, MI.*

103.06 Chemical Recycling of HCN in Cometary Comae
Author(s): Daniel C. Boice[1, 2], Hideyo Kawakita[3], Yoshiharu Shinnaka[3], Michael J. Mumma[4], Hitomi Kobayashi[3], Sayuri Ogawa[3]
Institution(s): *[1.] Scientific Studies and Consulting, San Antonio, TX. [2.] Trinity University, San Antonio, TX. [3.] Kyoto Sangyo University, Kyoto, Japan. [4.] NASA Goddard SFC, Greenbelt, MD.*

103.07 Comparative CO/CO2 Production in NEOWISE-Observed Comets
Author(s): James M. Bauer[1, 4], Rachel Stevenson[1], Emily Kramer[1, 2], Tommy Grav[3], A. Mainzer[1], Joseph Masiero[1], Roc Cutri[4], John Dailey[4], Sarah Sonnett[1], Carolyn Nugent[1], Karen Meech[5], Russ Walker[6], Carey Lisse[7], Adam Waszczak[8], Andrew Lucas[1], Nathan Blair[1], Edward Wright[9]
Institution(s): *[1.] Jet Propulsion Lab., Pasadena, CA. [2.] Department of Physics, University of Central Florida, Orlando, FL. [3.] Planetary Science Institute, Tucson, AZ. [4.] Infrared Processing and Analysis Center (IPAC), California Institute of Technology, Pasadena, CA. [5.] Institute for Astronomy, Manoa, HI. [6.] Monterey Institute for Research in Astronomy, Monterey, CA. [7.] Applied Physics Laboratory, Johns Hopkins University, Baltimore, MD. [8.] Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, CA. [9.] Department of Physics and Astronomy, University of California, Los Angeles, Los Angeles, CA.*
Contributing team(s): The NEOWISE Team

103.08 A New Analysis of Comet 29P/Schwassmann-Wachmann 1 Archival Images to Constrain Physical and Dynamical Properties of its Nucleus
Author(s): Charles A. Schambeau[1], Yanga R. Fernández[1], Nalin H. Samarasinha[2], Beatrice E. Muller[2], Laura M. Woodney[3], Karen Meech[4], Carey M. Lisse[5], Michael S. P. Kelley[6]
Institution(s): *[1.] Department of Physics, University of Central Florida, Orlando, FL. [2.] Planetary Science Institute, Tucson, AZ. [3.] Department of Physics, California State University San Bernardino, San Bernardino, CA. [4.] Institute for Astronomy, Manoa, HI. [5.] Johns Hopkins University Applied Physics Laboratory, Laurel, MD. [6.] Department of Astronomy, University of Maryland, College Park, MD.*

103.09 Physical Mechanism of Comet Outbursts: The Movie
Author(s): William K. Hartmann[1]
Institution(s): [1.] Planetary Science Inst., Tucson, AZ.

104 Exoplanet Atmosphere Observations

Monday, 10:30 am - 12:00 pm; Arizona Ballroom 7
Chair(s): Yohai Kaspi *(Weizmann Institute of Science)*

104.01 Global Weather Maps of Exoplanets and Brown Dwarfs
Author(s): Ian Crossfield[1], Beth Biller[2], Joshua Schlieder[3], Niall Deacon[4], Mickael Bonnefoy[5], Derek Homeier[7], France Allard[7], Esther Buenzli[6], Thomas Henning[6], Wolfgang Brandner[6], Bertrand Goldman[6], Taisiya Kopytova[6]
Institution(s): *[1.] U. Arizona/LPL, Tucson, AZ. [2.] University of Edinburgh, Edinburgh, United Kingdom. [3.] NASA/Ames, Mountain View, CA. [4.] University of Hertfordshire, Hertfordshire, United Kingdom. [5.] IPAG, Grenoble, France. [6.] MPIA, Heidelberg, Germany. [7.] CRAL-ENS, Lyon, France.*

104.02 Composition and Thermal Structure of WASP-43b from Phase-resolved Emission Spectroscopy
Author(s): Kevin B. Stevenson[1, 13], Jean-Michel Desert[2], Michael R. Line[3], Jacob L. Bean[1], Jonathan J. Fortney[3], Adam P. Showman[4], Tiffany Kataria[4], Laura Kreidberg[1], Peter R. McCullough[5, 6], Gregory W. Henry[7], David Charbonneau[8], Adam Burrows[9], Sara Seager[10], Nikku Madhusudhan[11], Michael H. Williamson[7], Derek Homeier[12]
Institution(s): *[1.] University of Chicago, Chicago, IL. [2.] University of Colorado, Boulder, CO. [3.] UC Santa Cruz, Santa Cruz, CA. [4.] University of Arizona, Tucson, AZ. [5.] STScI, Baltimore, MD. [6.] Johns Hopkins University, Baltimore, MD. [7.] Tennessee State University, Nashville, TN. [8.] Harvard University, Cambridge, MA. [9.] Princeton University, Princeton, NJ. [10.] MIT, Cambridge, MA. [11.] University of Cambridge, Cambridge, United Kingdom. [12.] Universite de Lyon, Lyon, France. [13.] NASA Sagan Fellow, Chicago, IL.*

104.03 The Atmospheric Circulation of the Hot Jupiter WASP-43b: Comparing Three-Dimensional Models to Spectrophotometric Data
Author(s): Tiffany Kataria[1], Adam P. Showman[1], Jonathan J. Fortney[2], Kevin B. Stevenson[3], Michael R. Line[2], Jacob L. Bean[3], Jean-Michel Désert[4]
Institution(s): *[1.] University of Arizona, Tucson, AZ. [2.] University of California at Santa Cruz, Santa Cruz, CA. [3.] University of Chicago, Chicago, IL. [4.] University of Colorado Boulder, Boulder, CO.*

104.04D Constraining the Thermal Structure, Abundances, and Dynamics of the Exoplanet HD 209458b
Author(s): Robert Zellem[1], Caitlin A. Griffith[1], Nikole K. Lewis[2], Mark R. Swain[3], Heather A. Knutson[4]
Institution(s): *[1.] Lunar and Planetary Laboratory - University of Arizona, Tucson, AZ. [2.] Department of Earth, Atmospheric and Planetary Sciences, Massachusetts Institute of Technology, Cambridge, MA. [3.] Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA. [4.] Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, CA.*

104.05 Connecting planetary and stellar heavy element enrichement: A new window into planet formation
Author(s): Jonathan J. Fortney[1], Daniel Thorngren[2], Johanna K. Teske[3], Natalie R. Hinkel[4]
Institution(s): *[1.] University of California, Santa Cruz, Santa Cruz, CA. [2.] University of California, Santa Cruz, Santa Cruz, CA. [3.] Carnegie Institution for Science, Washington, DC. [4.] San Francisco State University, San Francisco, CA.*

104.06D Super-Earths, Warm-Neptunes, and Hot-Jupiters: Transmission Spectroscopy for Comparative Planetology
Author(s): Jonathan D. Fraine[1, 2], Drake Deming[1, 4], Heather Knutson[3], Andrés Jordán[2]
Institution(s): *[1.] University of Maryland Department of Astronomy (, College Park, MD. [2.] Pontificia Universidad Católica de Chile, Instituto de Astrofísica, Santiago, Region Metropolitana, Chile. [3.] California Institute of Technology Division of Geological & Planetary Sciences, Pasadena, CA. [4.] NASA Astrobiology Institute's Virtual Planetary Laboratory, Mountain View, CA.*

104.07 An optical transmission spectrum (4000–10000 Å) of the super-Earth GJ 1214b
Author(s): Benjamin Rackham[1], Nestor Espinoza[2], Daniel Apai1, Andres Jordan[2], Mercedes Lopez-Morales[3], Jonathan Fraine[4, 2], Nikole Lewis5, Florian Rodler[3], Jonathan Fortney[6], David Osip[7]
Institution(s): *[1.] University of Arizona, Tucson, AZ. [2.] Pontificia Universidad Catolica de Chile, Santiago, Chile. [3.] Harvard-Smithsonian Center for Astrophysics, Cambridge, MA. [4.] University of Maryland, College Park, MD. [5.] Massachusetts Institute of Technology, Cambridge, MA. [6.] University of California Santa Cruz, Santa Cruz, CA. [7.] Carnegie Observatories, Pasadena, CA.*

104.08 Ground-Based Detection of Exoatmospheric Calcium
Author(s): Patricio M. Rojo[1], Nicola Astudillo-Defru[2]
Institution(s): *[1.] Astronomy, Universidad de Chile, Santiago, Chile. [2.] Institut de Planétologie et d'Astrophysique de Grenoble (IPAG), Grenoble, France.*

104.09 Transit spectroscopy with JWST: Systematics, starspots and stitching
Author(s): Joanna K. Barstow[1], Suzanne Aigrain[1], Patrick Irwin[1], Sarah Kendrew[1], Leigh N. Fletcher[1]
Institution(s): *[1.] University of Oxford, Oxford, United Kingdom.*

105 Titan 2: Atmospheric Chemistry

Monday, 10:30 am - 12:00 pm; Arizona Ballroom 11/ 12
Chair(s): Athena Coustenis *(Paris Observatory)* **&**
Panayotis Lavvas *(University of Arizona)*

105.01 A Coupled Ion-Neutral Photochemical Model for the Titan Atmosphere
Author(s): Veronique Vuitton[1], Roger V. Yelle[2], Stephen J. Klippenstein[3], Sarah M. Hörst[4], Panayotis Lavvas[5]
Institution(s): *[1.] CNRS, Univ. Grenoble Alpes, Grenoble, France. [2.] Univ. of Arizona, Tucson, AZ. [3.] Argonne National Lab., Argonne, IL. [4.] Johns Hopkins Univ., Baltimore, MD. [5.] CNRS, Univ. de Reims Champagne-Ardenne, Reims, France.*

105.02 A Complete Understanding of Hydrocarbon Chemistry in Titan's Atmosphere: from C-1 to C-3
Author(s): Cheng Li[1], Xi Zhang[2], Yuk L. Yung[1]
Institution(s): *[1.] Caltech, Pasadena, CA. [2.] University of Arizona, Tucson, AZ.*

105.03 Laboratory Investigations of Titan Haze Formation: Characterization of Gas Phase and Particle Phase Nitrogen
Author(s): Sarah Horst[2, 1], Heidi Yoon[1], Rui Li[1, 3], Joost deGouw[1, 3], Margaret Tolbert[1]
Institution(s): *[1.] University of Colorado, Boulder, CO. [2.] Johns Hopkins University, Baltimore, MD. [3.] NOAA, Boulder, CO.*

105.04 Modeling of synchrotron-based laboratory simulations of Titan's ionospheric photochemistry
Author(s): Nathalie Carrasco[1], Zhe Peng[2], Pascal Pernot[2]
Institution(s): *[1.] LATMOS, University of Versailles Saint Quentin, Guyancourt, France. [2.] University of Paris-Sud, Orsay, France.*

105.05 Tracing the gas composition of Titan's atmosphere with Herschel : Advances and Discoveries
Author(s): Miriam Rengel[1], Raphael Moreno[2], Régis Courtin[2], Emmanuel Lellouch[2], Hideo Sagawa[3], Paul Hartogh[1], Bruce Swinyard[4], Luisa Lara[5], Helmut Feuchtgruber[6], Christopher Jarchow[1], Trevor Fulton[7], José Cernicharo[8], Dominique Bockelée-Morvan[2], Nicolás Biver[2], Marek Banaszkiewicz[9], Armando González[1]
Institution(s): *[1.] Max Planck Institute for Solar System Research, Göttingen, Niedersachsen, Germany. [2.] Observatoire de Paris, Paris, France. [3.] Kyoto Sangyo University, Kyoto, Japan. [4.] Rutherford Appleton Laboratory, Oxfordshire, United Kingdom. [5.] Instituto de Astrofisica de Andalucia , Granada, Spain. [6.] Max Planck Institute for extraterrestrial Physics, Garching, Germany. [7.] Blue Sky Spectroscopy, Lethbridge, AB, Canada. [8.] Instituto de Estructura de la Materia, Madrid, Spain. [9.] Space Research Centre, Warszawa, Poland.*

105.06 Spectroscopic Confirmation of Ethyl Cyanide in Titan's Atmosphere using ALMA
Author(s): Maureen Y. Palmer[1, 3], Martin A. Cordiner[2, 3], Conor A. Nixon[3], Zbigniew Kisiel[4], Steven B. Charnley[3], Nick Teanby[5], Yi-Jehng Kuan[6], Michael J. Mumma[3]
Institution(s): *[1.] St. Olaf College, Northfield, MN. [2.] Catholic University of America, Washington, DC. [3.] Goddard Space Flight Center, Greenbelt, MD. [4.] Polish Academy of Sciences, Warsaw, Poland. [5.] University of Bristol, Bristol, United Kingdom. [6.] Academia Sinica, Taipei, Taiwan.*

105.07 C4N2 ice in Titan's atmosphere: reality or myth?
Author(s): Carrie Anderson[1], Robert E. Samuelson[1, 2], Richard K. Achterberg[1, 2], F. M. Flasar[1]
Institution(s): *[1.] NASA GSFC, Greenbelt, MD. [2.] University of Maryland, Department of Astronomy, College Park, MD.*

105.08 Condensation of Ices in Titan's Stratosphere
Author(s): Erika L. Barth[1]
Institution(s): *[1.] Southwest Research Inst., Boulder, CO.*

105.09 The surprising composition of Titan's high-altitude southern polar cloud
Author(s): Remco de Kok[1, 2], Nicholas Teanby[3], Luca Maltagliati[4], Patrick Irwin[5], Sandrine Vinatier[4]
Institution(s): *[1.] Leiden Observatory, Leiden, Netherlands. [2.] SRON Netherlands Institute for Space Research, Utrecht , Netherlands. [3.] School of Earth Sciences, University of Bristol, Bristol, United Kingdom. [4.] LESIA-Observatoire de Paris, Paris, France. [5.] Atmospheric, Oceanic & Planetary Physics, Department of Ph ysics, University of Oxford, Oxford, United Kingdom.*

106 History of Planetary Astronomy: Joint Session with the AAS Historical Astronomy Division

Monday, 10:30 am - 11:30 am; Tucson Ballroom G

Chair(s): Jay Pasachoff *(Williams College)*

106.01 Origins of the Lunar and Planetary Laboratory, University of Arizona
Author(s): Dale P. Cruikshank[1], William K. Hartmann[2]
Institution(s): *[1.] NASA Ames Research Center, Moffett Field, CA. [2.] Planetary Science Institute, Tucson, AZ.*

106.02 Planetary Radio Astronomy: The 60 Years from Burke and Franklin to ALMA
Author(s): Paul G. Steffes[1]
Institution(s): *[1.] Georgia Inst. of Tech., Atlanta, GA.*

106.03 History of the Terminal Cataclysm Concept: A Cataclysm That Never Happened?
Author(s): William K. Hartmann[1]
Institution(s): *[1.] Planetary Science Inst., Tucson, AZ.*

106.04 Discovery of a Previously Unrecognised Allusion to the Aurora Borealis in Paradise Lost, and Implications for Edmund Halley Scholarship
Author(s): Clifford J. Cunningham[1]
Institution(s): *[1.] University of Southern Queensland, Toowoomba, QLD, Australia.*

106.05 Christiaan Huygens : Sailing and Flying on Other Worlds
Author(s): Ralph Lorenz[1]
Institution(s): *[1.] JHU/APL, Laurel, MD.*

106.06 Recreating Galileo's 1609 Discovery of Lunar Mountains
Author(s): Jay M. Pasachoff[1, 2], Paul S. Needham[3], Ernest T. Wright[4], Owen Gingerich[5]
Institution(s): *[1.] Williams College, Williamstown, MA. [2.] Caltech, Pasadena, CA. [3.] Scheide Library, Princeton U., Princeton, NJ. [4.] Scientific Visualization Studio, NASA/GSFC, Greenbelt, MD. [5.] Harvard-Smithsonian CfA, Cambridge, MA.*

Pluto Observing Campaign Supporting New Horizons

Monday, 12:00 pm - 1:00 pm; San Luis 1

The July 2015 New Horizons encounter with Pluto presents a once-in-a-lifetime opportunity to directly link our Earth-based view of Pluto with 'ground truth' provided by in situ measurements. To support the New Horizons encounter, our Campaign Goal is straightforward: Establish an extensive Earth-based measurement context for the state of the Pluto system at the time of the flyby, including evolving trends in the system for at least one year prior- and post-flyby. This workshop is informal, intending to provide an opportunity to discuss current plans and encourage new programs.
Organizer(s): Richard Binzel *(MIT)*

Re-Numerate: Restoring Essential Numerical Skills

Monday, 1:00 pm - 5:00 pm; San Luis 2

All who step in front of an introductory science course today encounter the same problems with introducing quantitative science – students' gross lack of arithmetic skills, inability to think numerically and frequent pervasive fear of all things numerical. Although we can enhance appreciation of astronomy through qualitative methodologies, we do so at the expense of scientific authenticity and depth of understanding by excising the real and beautiful quantitative principles that underlie nature. We also reinforce the commonly-held belief that numerical skills are not useful in everyday life. This workshop will show participants how to confront misconceptions, increase student motivation and self-awareness and improve arithmetic thinking using astronomy-specific materials as well as "real life" examples. Participants will learn how to extend existing materials (e.g., Lecture Tutorials) for this purpose and will be introduced to new possibilities in labs, class activities, think-pair-share questions and homework assignments. This is a hands-on workshop, and participants will be engaged in creating new materials of their own, in addition to being introduced to our materials.
Organizer(s): Donald McCarthy *(Univ. of Arizona)*

MONDAY, 10 NOVEMBER 2014

Welcome; Presentation of the Gerard P. Kuiper Prize

Monday, 1:30 pm - 1:45 pm; Tucson Ballroom E/F

Chair(s): Heidi Hammel *(AURA)*

107 Gerard P. Kuiper Prize: Moist Convection, Peter Gierasch (Cornell University)

Monday, 1:45 pm - 2:20 pm; Tucson Ballroom E/F

Chair(s): Heidi Hammel *(AURA)*

107.01 Moist Convection
Author(s): Peter J. Gierasch[1]
Institution(s): *[1.] Cornell Univ., Ithaca, NY.*

108 Plenary Talk: Hot Facts About Cool Comets, Anita Cochran (University of Texas, McDonald Observatory)

Monday, 2:20 pm - 2:55 pm; Tucson Ballroom E/F

Chair(s): Susan Lederer *(NASA Johnson Space Center)* **&**
Joseph Harrington *(University of Central Florida)*

108.01 Hot Facts About Cool Comets
Author(s): Anita L. Cochran[1]
Institution(s): *[1.] Univ. of Texas, McDonald Observatory, Austin, TX.*

109 Plenary Talk: Exoplanets: A New Era of Comparative Planetology, Victoria Meadows (University of Washington)

Monday, 2:55 pm - 3:30 pm; Tucson Ballroom E/F

Chair(s): Susan Lederer *(NASA Johnson Space Center)* **&**
Joseph Harrington *(University of Central Florida)*

109.01 Exoplanets: A New Era of Comparative Planetology
Author(s): Victoria Meadows[1, 2]
Institution(s): *[1.] University of Washington, Seattle, WA. [2.] NASA Astrobiology Institute - Virtual Planetary Laboratory, Seattle, WA.*
Contributing team(s): NASA Astrobiology Institute - Virtual Planetary Laboratory

110 Comets K1 (PanStarrs) and A1 (Siding Spring)

Monday, 4:00 pm - 5:30 pm; Tucson Ballroom E/F

Chair(s): Emmanuel Jehin *(Universite de Liege)* **&**
Matthew Knight *(Lowell Observatory/JHU-APL)*

110.01 Probing the Molecular Complexity of Cometary Volatiles: The Case of C/2012 K1 (PanSTARRS)
Author(s): Stefanie N. Milam[1], Martin Cordiner[1, 2], Anthony Remijan[3], Adeline Gicquel[1, 2], Steven Charnley[1], Pierre Colom[4], Jacques Crovisier[4], Michael Mumma[1], Jeremie Boissier[5], Dominique Bockelee-Morvan[4], Nicolas Biver[4], Geronimo Villanueva[1, 2], Lucas Paganini[1, 2], Dariusz Lis[6], Yi-Jehng Kuan[7], Iain Coulson[8]
Institution(s): *[1.] NASA Goddard Space Flight Center, Greenbelt, MD. [2.] Catholic University of America, Washington, DC. [3.] National Radio Astronomy Observatory, Charlottesville, VA. [4.] Observatoire de Paris, Meudon, France. [5.] Institut de RadioAstronomie Millimétrique, Greoble, France. [6.] Observatorie de Paris and Caltech, Paris, France. [7.] Institute of Academia Sinica Astronomy and Astrophysics, Taipei, Taiwan. [8.] Joint Astronomy Center, Hilo, HI.*

110.02 The CO2 abundance in Comet C/2012 K1 (PanSTARRS) as Measured by Spitzer
Author(s): Adam McKay[1], Michael Kelley[2], Anita Cochran[1], Neil Dello Russo[3], Michael DiSanti[4], Carey Lisse3, Nancy Chanover[5]
Institution(s): *[1.] University of Texas Austin/McDonald Observatory, Austin, TX. [2.] University of Maryland, College Park, MD. [3.] Johns Hopkins University Applied Physics Laboratory, Laurel, MD. [4.] NASA Goddard Space Flight Center, Greenbelt, MD. [5.] New Mexico State University, Las Cruces, NM.*

110.03 SOFIA (+FORCAST) Infrared Spectrophotometry of Comet C/2012 K1 (PanStarrs)
Author(s): Charles E. Woodward[1], Michael S.P. Kelley[2], Diane H. Wooden[3], David E. Harker[4], James M. De Buizer[5], Adeline Gicquel[6]
Institution(s): *[1.] Univ. of Minnesota, Minneapolis, MN. [2.] Univ. of Maryland, College Park, MD. [3.] NASA Ames, Moffett Field, CA. [4.] Univ. Calif. San Diego, La Jolla, CA. [5.] SOFIA Sci. Ctr., Moffett Field, CA. [6.] NASA Goddard, Greenbelt, MD.*

110.04 Observation of Comet Siding Spring by the High Resolution Imaging Science Experiment (HiRISE) on Mars Reconnaissance Orbiter (MRO)
Author(s): Alan Delamere[1], Alfred S. McEwen[2], Sarah Mattson[2], Rodney Heyd[2], Anjani T. Polit[2], Christian Schaller [2], Richard W. Zurek[5], Sarah M. Miilkovich[5], Kristin Block[2], Leslie K. Tamppari[5], Jian_Yang Li[3], Tony Farnham[6], Carey M. Lisse[4], Michael S. Kelley[4]
Institution(s): *[1.] Delamere Space Sciences, Boulder, CO. [2.] University of Arizona, Tucson, AZ. [3.] Planetary Science Institute, Tucson, AZ. [4.] Johns Hopkins University, APL, Laurel, MD. [5.] Jet Propulsion Labratory, Pasadena, CA. [6.] University of Maryland, College Park, MD.*

110.05 Hubble Space Telescope View of Comet C/2013 A1
Author(s): Jian-Yang Li[1], Nalin H. Samarasinha1, Michael S. Kelley[2], Tony L. Farnham[2], Dennis Bodewits[2], Michael F. A'Hearn[2], Carey M. Lisse[3], W. A. Delamere[4], Max J. Mutchler[5]
Institution(s): *[1.] Planetary Science Institute, Tucson, AZ. [2.] University of Maryland, College Park, MD. [3.] Johns Hopkins University Applied Physics Laboratory, Laurel, MD. [4.] Delamere Support Services, Boulder, CO. [5.] Space Telescope Science Institute, Baltimore, MD.*

110.06 NASA/IRTF, Chandra, and HST Observations of Comet C/2013 A1 (Siding Spring)'s Encounter with Mars
Author(s): Casey M. Lisse[1], Jian-Yang Li[2], Max Mutchler[3], Scott Wolk[4], Damian Christian[5], Michael Combi[6], Susan Lepri[6], Thomas Zurbuchen[6]
Institution(s): *[1.] Johns Hopkins Univ., Laurel, MD. [2.] PSI, Tucson, AZ. [3.] STScI, Baltimore, MD. [4.] Harvard-SAO, Cambridge, MA. [5.] CSUN, Northridge, CA. [6.] Univ of Michigan, Ann Arbor, MI.*

110.07 TRAPPIST monitoring of comet C/2013 A1 (Siding Spring)
Author(s): Cyrielle Opitom[1], Emmanuël Jehin[1], Jean Manfroid[1], Damien Hutsemékers[1], Michaël Gillon[1]
Institution(s): *[1.] University of Liège, Département d'Astrophysique et de Géophysique, Liège, Belgium.*

110.08 A Smorgasbord of Comet Narrowband Photometry: Results from 209P/LINEAR, PanSTARRS (2012 K1), Jacques (2014 E2), and Siding Spring (2013 A1)
Author(s): David G. Schleicher[1]
Institution(s): *[1.] Lowell Obs., Flagstaff, AZ.*

110.09 The Water Production Rate of Recent Comets (2013-2014) by SOHO/SWAN: 2P/Encke (2013), C/2013 R1 (Lovejoy), and C/2013 A1 (Siding Spring)
Author(s): Michael R. Combi[1], J. T. Mäkinen[2], J. L. Bertaux[3], Eric Quémerais[3], Stéphane Ferron[4]
Institution(s): *[1.] Univ. of Michigan, Ann Arbor, MI. [2.] FMI, Helsinki, Finland. [3.] LATMOS/IPSI, Université de Versailles Saint-Quentin, Guyancourt, France. [4.] ACRI-st, Sophia-Antipolis, France.*

111 Exoplanet Atmospheric Retrieval

Monday, 4:00 pm - 5:30 pm; Arizona Ballroom 7

Chair(s): Joanna Barstow *(University of Oxford)* **& Ian Crossfield** *(U.Arizona/LPL)*

111.01 Transit Spectroscopy: new data analysis techniques and interpretation
Author(s): Giovanna Tinetti[1], Ingo P. Waldmann[1], Giuseppe Morello[1], Marcell Tessenyi[1], Ryan Varley[1], Emma Barton[1], Sergey Yurchenko[1], Jonathan Tennyson[1], Morgan Hollis[1]
Institution(s): *[1.] University College London, London, England, UK, United Kingdom.*
Contributing team(s): ExoLights, ExoMol

111.02 Tau-REx: A new look at the retrieval of exoplanetary atmospheres
Author(s): Ingo Waldmann[1]
Institution(s): [1.] Physics & Astronomy, UCL, London, United Kingdom.

111.03 A Uniform Retrieval Analysis of Transit Transmission Spectra: Quantifying the detection of Clouds, Hazes and Water
Author(s): Michael R. Line[1], Kyle Luther[2], Jonathan Fortney[1]
Institution(s): [1.] University of California-Santa Cruz, Santa Cruz, CA. [2.] Unviersity of California-Berkeley, Berkeley , CA.

111.04 An Open-Source Bayesian Atmospheric Radiative Transfer (BART) Code, and Application to WASP-12b
Author(s): Joseph Harrington[1], Jasmina Blecic[1], Patricio Cubillos[1], Patricio M. Rojo[2], Thomas J. Loredo[3], Matthew O. Bowman[1], Andrew S. Foster[1], Madison M. Stemm[1], Nate B. Lust[1]
Institution(s): [1.] University of Central Florida, Orlando, FL. [2.] Universidad de Chile, Santiago, Chile. [3.] Cornell University, Ithaca, NY.

111.05D Bayesian Atmospheric Radiative Transfer (BART) Thermochemical Equilibrium Abundance (TEA) Code and Application to WASP-43b
Author(s): Jasmina Blecic[1], Joseph Harrington[1], Matthew O. Bowman[1], Patricio E. Cubillos[1], Madison Stemm[1], Andrew Foster[1]
Institution(s): [1.] University of Central Florida, Orlando, FL.

111.06D Bayesian Atmospheric Radiative Transfer (BART): Model, Statistics Driver, and Application to HD 209458b
Author(s): Patricio Cubillos[1], Joseph Harrington[1], Jasmina Blecic[1], Madison M. Stemm[1], Nate B. Lust[1], Andrew S. Foster[1], Patricio M. Rojo[2], Thomas J. Loredo[3]
Institution(s): [1.] University of Central Florida, Orlando, FL. [2.] Universidad de Chile, Santiago, Region Metropolitana, Chile. [3.] Cornell University, Ithaca, NY.

111.07D The Elemental Compositions and Cloud Properties of Hot Jupiters: A Comprehensive Atmospheric Retrieval Study of Hot Jupiter Transmission Spectra
Author(s): Bjoern Benneke[1]
Institution(s): [1.] Caltech, Pasadena, CA.

111.08 Interpreting Gemini Planet Imager Spectroscopy of the Young Giant Planets HR 8799 c and d
Author(s): Mark S. Marley[1], Patrick Ingraham[2], Didier Saumon[3], Christian Marois[4]
Institution(s): [1.] NASA Ames Research Center, Moffett Field, CA. [2.] Stanford University, Stanford, CA. [3.] Los Alamos National Laboratory, Los Alamos, NM. [4.] NRC Herzberg Astronomy and Astrophysics, Victoria, BC, Canada.
Contributing team(s): The Gemini Planet Imager Collaboration

111.09 Cloud signatures in transit spectra of exoplanet atmospheres
Author(s): Sanaz Vahidinia[1], Jeff Cuzzi[2], Mark Marley[2], Jonathan Fortney[3]
Institution(s): [1.] Bay area enviromental institute/NASA Ames Research Center, Mountain View, CA. [2.] NASA Ames Research Center, Mountain View, CA. [3.] University of California Santa Cruz, Santa Cruz, CA.

MONDAY, 10 NOVEMBER 2014

112 Titan 3: Surface Composition and Hydrology

Monday, 4:00 pm - 5:30 pm; Arizona Ballroom 11/ 12

Chair(s): Jason Soderblom *(Massachusetts Institute of Technology)* **&**
Melissa Trainer *(NASA Goddard Space Flight Center)*

112.01 Spectral Characteristics of Titan's Surface
Author(s): Caitlin A. Griffith[1], Jake D. Turner[2], Paulo Penteado[3], Tymon B. Khamsi[1], Jason M. Soderblom[4]
Institution(s): *[1.] University of Arizona, Tucson, AZ. [2.] University of Virginia, Charlottesville, VA. [3.] Northern Arizona University, Flagstaff, AZ. [4.] Massachusetts Institute of Technology, Boston, MA.*
Contributing team(s): Cassini VIMS team

112.02 Surface of Titan : model and VIMS observations
Author(s): Pascal Rannou[1], Daniel Toledo[1], Alberto Adriani[2], Maria Luisa Moriconi[2], Emiliano D'Aversa[2], Stéphane Le Mouélic[3], Christophe Sotin[4], Robert H. Brown[5]
Institution(s): *[1.] GSMA , University of Reims-Champagne Ardenne, Reims, France. [2.] INAF-IAPS, Roma, Italy. [3.] LPGN, Université de Nantes, Nantes, France. [4.] JPL, Pasadena, CA. [5.] LPL, University of Arizona, Tucson, AZ.*

112.03 Mapping the Atmospheric and Surface Properties of Titan by the Massive Inversion of Cassini/VIMS Spectra
Author(s): Luca Maltagliati[1], Sébastien Rodriguez[1], Thomas Appéré[1], Mathieu Vincendon[2], Sylvain Douté[3], Stéphane LeMouelic[4], Pascal Rannou[5], Christophe Sotin[6, 4], Jason W. Barnes[7], Athena Coustenis[8], Robert H. Brown[9]
Institution(s): *[1.] Laboratoire AIM, CEA-Saclay, Gif-sur-Yvette, France. [2.] IAS, Orsay, France. [3.] IPAG, Grenoble, France. [4.] LPG, Nantes, France. [5.] GSMA, Reims, France. [6.] JPL, Pasadena, CA. [7.] University of Idaho, Moscow, ID. [8.] LESIA, Meudon, France. [9.] University of Arizona, Tucson, AZ.*

112.04 The interaction of benzene and ethylene under Titan surface conditions
Author(s): Patricia Beauchamp[1], Tuan H. Vu[1], Morgan L. Cable[1], Robert P. Hodyss[1], Mathieu Choukroun[1]
Institution(s): *[1.] Jet Propulsion Laboratory - Caltech, La Canada Flintridge, CA.*

112.05 The methane distribution on Titan: high resolution spectroscopy in the near-IR with Keck NIRSPEC/AO
Author(s): Mate Adamkovics[1], Jonathan L. Mitchell[2]
Institution(s): *[1.] University of California, Berkeley, CA. [2.] University of California, Los Angeles, CA.*

112.06 Ground Based Monitoring of Cloud Activity on Titan
Author(s): Paul Corlies[1], Alexander Hayes[1], Patricio Rojo[2], Máté Ádámkovics[3], Elizabeth Turtle[4], Bonnie Buratti[5]
Institution(s): *[1.] Cornell University, Ithaca, NY. [2.] Universidad de Chila, Santiago, Chile, Chile. [3.] University of California, Berkeley, Berkeley, CA. [4.] John Hopkins University, Baltimore, MD. [5.] Jet Propulsion Laboratory, Pasadena, CA.*

112.07 Frozen Hydrocarbon Ponds on Titan: Implications for Titan's Lakes and Seas
Author(s): Jason M. Soderblom[1], Jason W. Barnes[2], Robert H. Brown[3], Alexander G. Hayes4, Jason E. Perry[3], Laurence A. Soderblom[5], Elizabeth P. Turtle[6]
Institution(s): *[1.] Massachusetts Institute of Technology, Cambridge, MA. [2.] University of Idaho, Moscow, ID. [3.] University of Arizona, Tucson, AZ. [4.] Cornell University, Ithaca, NY. [5.] United States Geological Survey, Flagstaff, AZ. [6.] Johns Hopkins University , Laurel, MD.*

112.08 The Flushing of Ligeia: Composition variations in a simple hydrological model of Titan's Seas
Author(s): Ralph Lorenz[1]
Institution(s): *[1.] JHU/APL, Laurel, MD.*

112.09 The Depth, Composition, and Sea State of Titan's Mare
Author(s): Alexander Hayes[1], Marco Mastrogiuseppe[1], Ralph Lorenz[2], Jason Hofgartner[1], Jonathan Lunine[1], Howard Zebker[3], Mark Donelan[4], Stephen Wall[5], Ellen Stofan[6], Ozgur Karatekin[9], Claudia Notarnicola1[1], Michael Malaska[5], Alice Le Gall[7], Karl Mitchell[5], Philippe Paillou[10], Pierre Encrenaz[8], Rosaly Lopes[5]
Institution(s): *[1.] Cornell University, Ithaca, NY. [2.] JHU Applied Physics Laboratory, Laurel, MD. [3.] Stanford University, Stanford, CA. [4.] University of Miami, Miami, FL. [5.] Jet Propulsion Laboratory, Pasadena, CA. [6.] Proxemy Research, Washington D.C., DC. [7.] University of Paris, Paris, France. [8.] Observatoire de Paris, Paris, France. [9.] Royal Observatory of Belgium, Belgium, Netherlands. [10.] Laboratoire d'Astrophysique de Bordeaux, Bordeaux, France. [11.] EURAC-Institute of Applied Remote Sensin, Bolzano, Italy.*
Contributing team(s): Cassini Radar Science Team

113 Sun-grazing Comet ISON

Monday, 5:30 pm - 6:00 pm; Tucson Ballroom E/F

Chair(s): Hideyo Kawakita *(Kyoto Sangyo University)*

113.01 Coma Chemistry of Sun-grazing Comets
Author(s): Steven B. Charnley[1], Martin A. Cordiner[1, 2], Stefanie N. Milam[1], Adeline Gicquel[1, 2]
Institution(s): *[1.] NASA Goddard Space Flight Center, Greenbelt, MD. [2.] The Catholic University of America, Washington, DC.*

113.02 Gas Distributions in Comet ISON's Coma: Concurrent Integral-Field Spectroscopy and Narrow-band Imaging.
Author(s): Carl Schmidt[1], Robert E. Johnson[1], Jeffrey Baumgardner[2], Michael Mendillo[2]
Institution(s): *[1.] Materials Science & Engineering, University of Virginia, Charlottesville, VA. [2.] Boston University, Boston , MA.*

113.03D Model Interpretation of Measured Water Rotational Temperatures and Column Abundances in the Coma of Comet C/2012 S1 (ISON)
Author(s): Nicolas Fougere[1], Michael R. Combi[1], Boncho P. Bonev[2, 3], Valeriy Tenishev[1], Michael J. Mumma[3]
Institution(s): *[1.] University of Michigan , Ann Arbor, MI. [2.] The Catholic University of America, Washington , DC. [3.] NASA's Goddard Space Flight Center, Greenbelt, MD.*

114 Exoplanet Eclipses and Phase Curves from Kepler

Monday, 5:30 pm - 6:00 pm; Arizona Ballroom 7
Chair(s): Vivien Parmentier *(OCA)*

114.01 *Studying Atmosphere-Dominated Kepler Phase Curves*
Author(s): Avi Shporer[1], Renyu Hu[2]
Institution(s): *[1.] Sagan Fellow, JPL, Pasadena, CA. [2.] Hubble Fellow, JPL, Pasadena, CA.*

114.02 A Study of Kepler Phase Curves and Secondary Eclipses
Author(s): Em DeLarme[1, 2], Daniel Angerhausen[2], Joeseph Harrington[1], Jon A. Morse[2, 3]
Institution(s): *[1.] University of Central Florida , Orlando, FL. [2.] Rensselaer Polytechnic Institute, Troy, NY. [3.] BoldlyGo Enterprises, Worcester, MA.*

114.03 Statistical Eclipses of Close-in Kepler Sub-Saturns
Author(s): Holly A. Sheets[1], Drake Deming[1]
Institution(s): *[1.] University of Maryland, College Park, MD.*

115 Titan 4: Surface Geology

Monday, 5:30 pm - 6:20 pm; Arizona Ballroom 11/ 12

Chair(s): Alexander Hayes *(Cornell University)* **&**
Jani Radebaugh *(Brigham Young University)*

115.01D Is Titan's Dune Orientation Controlled by Tropical Methane Storms?
Author(s): Benjamin Charnay[1, 2], Erika Barth3, Scot Rafkin[3], Clément Narteau[4], Sébastien Lebonnois[2], Sébastien Rodriguez[5], Sylvain Courrech du Pont[6], Antoine Lucas[5]
Institution(s): *[1.] Virtual Planetary Laboratory, University of Washington, Seattle, WA. [2.] Laboratoire de Météorologie Dynamique, Université Paris 6, Paris, France. [3.] Southwest Research Institut, Boulder, CO. [4.] Institut de Physique du Globe de Paris, Paris, France. [5.] Laboratoire Astrophysiaue, Instrumentation et Modélisation, Université Paris-Diderot, Gif sur Yvette, France. [6.] Laboratoire de Matière et Systèmes Complexes, Université Paris-Diderot, Paris, France.*

115.02 Production Mechanisms for the Sand on Titan and the Prospects for a Global Sand Sea

Author(s): Jason W. Barnes[1], Ralph D. Lorenz[2], Jani Radebaugh[3], Alexander G. Hayes[4], Shannon MacKenzie[1]

Institution(s): *[1.] University of Idaho, Moscow, ID. [2.] JHU/APL, Laurel, MD. [3.] BYU, Provo, UT. [4.] Cornell, Ithaca, NY.*

115.03 Fluvial Erosion of Craters on Titan

Author(s): Catherine Neish[1], Jamie L. Molaro[2], Juan Lora[2], Alan D. Howard[3], Randolph L. Kirk[4], Paul Schenk[5], Veronica J. Bray[2]

Institution(s): *[1.] Physics and Space Sciences, Florida Institute of Technology, Melbourne, FL. [2.] University of Arizona, Tucson, AZ. [3.] University of Virginia, Charlottesville, VA. [4.] United States Geological Survey, Flagstaff, AZ. [5.] Lunar and Planetary Institute, Houston, TX.*

115.04 Fluvial Erosion and Transportation of an Impact Regolith Layer: Implications for Titan

Author(s): Jeffrey M. Moore[1], Alan D. Howard[2], Sylvain Breton[3]

Institution(s): *[1.] NASA Ames Research Center, Moffett Field, CA. [2.] University of Virginia, Charlottesville, VA. [3.] Université Claude Bernard Lyon, Observatoire de Lyon, Formation Sciences de la Terre, Lyon, France.*

115.05D GCM Simulations of Titan's Paleoclimate

Author(s): Juan M. Lora[1, 2], Jonathan Lunine[3], Joellen Russell[1], Alexander Hayes[3]

Institution(s): *[1.] University of Arizona, Tucson, AZ. [2.] University of California, Los Angeles, Los Angeles, CA. [3.] Cornell University, Ithaca, NY.*

Agency Night

Monday, 7:30 pm - 9:30 pm; Tucson E/F

Chair(s): Heidi Hammel *(AURA)*

TUESDAY, 11 NOVEMBER 2014

200 Comet Dust, Tails, Trails, and Oddballs

Tuesday, 8:30 am - 10:00 am; Tucson Ballroom E/F

Chair(s): Henry Hsieh *(University of Hawaii)* **&**
Stefanie Milam *(NASA Goddard Space Flight Center)*

200.01 Gradients in dust chemical composition in protoplanetary disks: analogies with the Solar System
Author(s): Basmah Riaz[1, 2], M. Kelley[2], H. Campins[3]
Institution(s): *[1.] Uni. of Hertfordshire, Hatfield, United Kingdom. [2.] Uni. of Maryland, College Park, MD. [3.] Uni. of Central Florida, Orlando, FL.*

200.02 C/2013 P2 Pan STARRS - The Manx Comet
Author(s): Karen J. Meech[1, 6], Bin Yang[2], Jacqueline Keane[1, 6], Olivier Hainaut[7], Jan Kleyna[1, 6], Henry Hsieh[3], James Bauer[4], Richard Wainscoat[1], Peter Veres[5]
Institution(s): *[1.] University of Hawaii, Honolulu, HI. [2.] European Southern Observatory, Santiago, Chile. [3.] ASIAA, Taipei, Taiwan. [4.] Jet Propulsion Laboratory, Pasadena, CA. [5.] Comenius University, Bratislava, Slovakia. [6.] NASA Astrobiology Institute, Moffett Field, CA. [7.] European Southern Observatory, Garching, Germany.*

200.03 Discovery of the Fast Spinning Main Belt Comet (62412) 2000 SY178
Author(s): Scott S. Sheppard[1], Chadwick A. Trujillo[2]
Institution(s): *[1.] Carnegie Inst. for Science, Washington, DC. [2.] Gemini Obs., Hilo, HI.*

200.04 Rotational Disruption of Comets with Parabolic Orbits
Author(s): Michal Drahus[1]
Institution(s): *[1.] Astronomical Observatory, Jagiellonian University, Krakow, Poland.*

200.05D A Novel, Sublimation-Driven YORP-like Effect, and The Formation of Dust Striae in Cometary Tails
Author(s): Jordan Steckloff[1], Seth A. Jacobson[2]
Institution(s): *[1.] Department of Physics and Astronomy, Purdue University, Lafayette, IN. [2.] Observatoire de la Côte d'Azur, Nice, France.*

200.06 Observations of Comet P/2003 T12 = 2012 A3 (SOHO) at large phase angle in STEREO-B
Author(s): Man-To Hui[1]
Institution(s): *[1.] University of California, Los Angeles, Los Angeles, CA.*

200.07 209P/LINEAR: a peacefully demising comet?
Author(s): Quanzhi Ye[1], Peter Brown[1], Paul Wiegert[1], Man-To Hui[2], Margaret Campbell-Brown[1]
Institution(s): *[1.] The University of Western Ontario, London, ON, Canada. [2.] UCLA, Los Angeles, CA.*

200.08 Extended Solar System Structures Observed by WISE
Author(s): Mark V. Sykes[1], Frank Masci[2], Roc Cutri[2], Russell Walker[3], Amy Mainzer[4], James Bauer[2], Rachel Stevenson[4], Pasquale Tricarico[1]
Institution(s): *[1.] Planetary Science Institute, Tucson, AZ. [2.] IPAC/Caltech, Pasadena, CA. [3.] Monterey Institute for Research in Astronomy, Monterey, CA. [4.] Jet Propulsion Laboratory, Pasadena, CA.*

200.09D Studying Short-Period Comets and Long-Period Comets Detected by WISE/ NEOWISE
Author(s): Emily A. Kramer[1, 2], Yanga R. Fernández[1], James M. Bauer[2], Rachel Stevenson[2], Amy K. Mainzer[2], Tommy Grav[3], Joseph Masiero[2], Russell G. Walker[4], Carey M. Lisse[5]
Institution(s): *[1.] University of Central Florida, Orlando, FL. [2.] Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA. [3.] Planetary Science Institute, Tucson, AZ. [4.] Monterey Institute for Research in Astronomy, Monterey, CA. [5.] Applied Physics Laboratory, Johns Hopkins University, Laurel, MD.*
Contributing team(s): The WISE Team

201 Exoplanet Orbital Dynamics and the Future

Tuesday, 8:30 am - 10:00 am; Arizona Ballroom 7

Chair(s): Christa Van Laerhoven *(University of Arizona)* **& Rory Barnes** *(University of Washington)*

201.01D Extraterrestrial Planet Formation in the Time Domain
Author(s): Huan Meng[1, 2], Kate Su[2], George Rieke[1, 2]
Institution(s): *[1.] Lunar & Planetary Lab, University of Arizona, Tucson, AZ. [2.] Steward Observatory, University of Arizona, Tucson, AZ.*

201.02 Binary Planets
Author(s): Keegan Ryan[1], Miki Nakajima[1], David J. Stevenson[1]
Institution(s): *[1.] Caltech, Pasadena, CA.*

201.03 Constraints on Exomoon Formation
Author(s): Miki Nakajima[1], Hidenori Genda[2], Erik Asphaug[3], Shigeru Ida[2]
Institution(s): *[1.] California Institute of Technology, Pasadena, CA. [2.] Earth-Life Science Institute, Tokyo, Tokyo, Japan. [3.] Arizona State University, Phoenix, AZ.*

201.04 Detection and Characterization of Non-Transiting Planets from Transit Timing Variations
Author(s): David Nesvorny[1], David Kipping[2], Dirk Terrell[1]
Institution(s): *[1.] SWRI, Boulder, CO. [2.] Harvard-Smithsonian Center for Astrophysics, Cambridge, MA.*

201.05 Compositional Constraints on the Best-Characterized Rocky Exoplanet, Kepler-36 b
Author(s): Jack J. Lissauer[1], Leslie Rogers[2], Katherine M. Deck[2], Joshua A. Carter[3]
Institution(s): *[1.] NASA Ames Research Center, Moffett Field, CA. [2.] Caltech, Pasadena, CA. [3.] Center for Astrophysics, Cambridge, MA.*

201.06 Characterizing Low-Mass Planets in Kepler's Multi-Planet Systems with Transit Timing
Author(s): Daniel Jontof-Hutter[1], Jack Lissauer[2], Jason Rowe[2, 3], Daniel Fabrycky[4]
Institution(s): *[1.] Pennsylvania State University, State College, PA. [2.] NASA Ames Research Center, Moffett Field, CA. [3.] SETI Institute, Mountain View, CA. [4.] University of Chicago, Chicago, IL.*

201.07 The potential of GPI extreme AO system to image and characterize exoplanets and asteroids
Author(s): Franck Marchis[1], David Vega[1]
Institution(s): *[1.] SETI Institute, Mountain View, CA.*
Contributing team(s): Gemini Planet Imager Science Team

201.08 Exoplanet Frequency from Kepler, and Implications for AFTA
Author(s): Wesley A. Traub[1]
Institution(s): *[1.] Jet Propulsion Laboratory, Pasadena, CA.*

201.09 Anti-Clockwork Planetary Systems: Long-Lived Chaotic Evolution of Mutually Inclined Exoplanets in Mean Motion Resonances
Author(s): Rory Barnes[1], Russell Deitrick[1], Richard Greenberg[2], Thomas R. Quinn[1], Sean N. Raymond[3]
Institution(s): *[1.] University of Washington, Seattle, WA. [2.] University of Arizona, Tucson, AZ. [3.] Laboratoire d'Astrophysique de Bordeaux, Bordeaux, France.*

202 Education

Tuesday, 8:30 am - 10:00 am; Arizona Ballroom 11/ 12

Chair(s): Louis Mayo *(NASA's GSFC)* **&**
Padma Yanamandra-Fisher *(Space Science Institute)*

202.01 NASA's Big Events: A Framework for Public Engagement
Author(s): Louis Mayo[1], Troy Cline[1], Elaine Lewis[1], Carolyn Ng[1]
Institution(s): *[1.] NASA's GSFC, Greenbelt, MD.*

202.02 Preliminary Results from a Survey of DPS Scientist's Attitudes, Activities and Needs in Education and Public Outreach
Author(s): Jennifer A. Grier[1], Sanlyn Buxner[2], Nick Schneider[3]
Institution(s): *[1.] Planetary Science Institute, Columbia, MD. [2.] Planetary Science Institute, Tucson, AZ. [3.] University of Colorado, LASP, Boulder, CO.*

202.03 Introducing Slide Sets for the Introductory Astronomy Instructor
Author(s): Bonnie K. Meinke[1], Nicholas Schneider[2], David Brain[2], Gregory Schultz[3], Sanlyn Buxner[4], Denise Smith[1]
Institution(s): *[1.] STScI, Baltimore, MD. [2.] LASP/CU Boulder, Boulder, CO. [3.] Astronomical Society of the Pacific, San Francisco, CA. 4. PSI, Tucson, AZ.*

202.04 Citizen Science in Planetary Sciences: Intersection of Scientific Research and Amateur Networks
Author(s): Padma A. Yanamandra-Fisher[1]
Institution(s): *[1.] Space Science Institute, Rancho Cucamonga, CA.*

202.05 Using Mars Rover Missions as a Vehicle for Introducing Space Science and Engineering in Grades 3-8
Author(s): Edgar A. Bering[1], Elana M. Slagle[2], Kenneth Nieser[1], Coleen Carlson[1], Andrew J. Kapral[1], Laura A. Jacobs[1]
Institution(s): *[1.] Physics and ECE, University of Houston, Houston, TX. [2.] Starfish Education, Woodinville, WA.*

202.06 Using the Planetary Science Institute's Meteorite Mini-Kits to Address the Nature of Science
Author(s): Larry A. Lebofsky[1, 2], Thea L. Cañizo[1], Sanlyn Buxner[1]
Institution(s): *[1.] Planetary Science Institute, Tucson, AZ. [2.] University of Arizona, Tucson, AZ.*

202.07 The Art Of Planetary Science: An Exhibition – Bringing Together The Art And Science Communities To Engage The Public
Author(s): Jamie Molaro[1], Jamies Keane[1], Sarah Peacock[1], Ethan Schaefer[1], Hannah Tanquary[1]
Institution(s): *[1.] Planetary Sciences, University of Arizona, Tucson, AZ.*

202.08 Investigating Undergraduate Students' Conceptions of Radiation
Author(s): James M. Romine[1], Sanlyn Buxner[1], Chris Impey[1], Megan Nieberding[1], Jessie C. Antonellis[2]
Institution(s): *[1.] Steward Observatory, University of Arizona, Tucson, AZ. [2.] Independent, Winnebago, NE.*
Contributing team(s): Collaborations of Astronomy Teaching Scholars (CATS), Steward Observatory, University of Arizona

202.09 Where Non-Science Majors Get Information about Science and How They Rate that Information
Author(s): Sanlyn Buxner[1], Chris Impey[1], Megan Nieberding[1], James Romine[1]
Institution(s): *[1.] University of Arizona, Tucson, AZ.*

Solar System Observations with the K2 Mission

Tuesday, 10:00 am - 12:00 pm; Arizona Ballroom 1-4

The workshop will provide information regarding the Observatory's capabilities and opportunities for observing Solar System bodies.
Organizer(s): Doris Daou *(NASA)*

TUESDAY, 11 NOVEMBER 2014

203 Mars Surface and Interior

Tuesday, 10:30 am - 12:00 pm; Tucson Ballroom E/F

Chair(s): Nadine Barlow *(Northern Arizona Univ.)* **&**
Michael Meyer *(NASA Headquarters)*

203.01 Curiosity Overview of a Two-Year Odyssey
Author(s): Michael A. Meyer[1], Ashwin R. Vasavada[2]
Institution(s): *[1.] Planetary Science Division, NASA Headquarters, Washington, DC. [2.] JPL, Pasadena, CA.*
Contributing team(s): MSL Science Team

203.02 Recent Highlights of ChemCam's exploration of Gale Crater
Author(s): Diana L. Blaney[1], Roger C. Wiens[2], Sylvestre Maurice[3], Ryan Anderson[4], Samuel Clegg[2], Laetitia Le Deit[5], Olivier Forni[3], Olivier Gasnault[3], Jeffry R. Johnson[6], Nina Lanza[2], Jeremie A. Lasue[3], Nicholas Mangold[5], Marion Nachon[5], Horton Newsom[7], Agnes Pilleri [2], Violaine Sautter[8]
Institution(s): *[1.] Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA. [2.] Los Alamos National Laboratory, Los Alamos, NM. [3.] 3 Université Paul Sabatier; UPS-OMP; Institute de Recherche en Astrophysique et Planetologie (IRAP), Toulouse, France. [4.] U.S. Geological Survey, Astrogeology Science Center, Flagstaff, AZ. [5.] LPG Nantes, CNRS Université Nantes, Nantes, France. [6.] Applied Physics Laboratory, Johns Hopkins University, Laurel, MD. [7.] Institute of Meteoritics, University of New Mexico, Albuquerque, NM. [8.] Institute of Mineralogy, Materials, Physics, and Cosmochemistry, University Pierre et Marie Curie, Paris, France.*
Contributing team(s): The MSL Science Team

203.03 Recurring Slope Lineae (RSL) and Future Exploration of Mars and Europa
Author(s): Alfred S. McEwen[1]
Institution(s): *[1.] Univ. of Arizona, Tucson, AZ.*
Contributing team(s): HiRISE team, CRISM team

203.04 Comparing Central Pit Craters on Mars, Ganymede, Mercury, and the Moon
Author(s): Nadine G. Barlow[1]
Institution(s): *[1.] Northern Arizona Univ., Flagstaff, AZ.*

203.05 Ground Ice on Mars: Numerical Modelling of a Terraced Crater in Arcadia Planitia
Author(s): Elena Martellato[1, 2], Gabriele Cremonese[2], Alice Lucchetti[3, 2], Matteo Massironi[4], Francesco Marzari[1], Ali M. Bramson[5], Shane Byrne[5], Sarah Mattson[5]
Institution(s): *[1.] Dept. of Physics and Astronomy, University of Padova, Padova, Italy. [2.] INAF-Astronomical Observatory of Padova, Padova, Italy. [3.] CISAS, University of Padova, Padova, Italy. [4.] Dept. of Geosciences, University of Padova, Padova, Italy. [5.] Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ.*

203.06 Distribution and Compositional Constraints on Subsurface Ice in Arcadia Planitia, Mars
Author(s): Ali M. Bramson[1], Shane Byrne[1], Nathaniel E. Putzig[2], Sarah Mattson[1], Jeffrey J. Plaut[3], John W. Holt[4]
Institution(s): *[1.] University of Arizona, Tucson, AZ. [2.] Southwest Research Institute, Boulder, CO. [3.] Jet Propulsion Laboratory, Pasadena, CA. [4.] University of Texas at Austin, Austin, TX.*

203.07 Reinterpreting the Impact Craters of the North Polar Layered Deposits, Mars
Author(s): Margaret E. Landis[1], Shane Byrne[1], Ingrid J. Daubar[1], Kenneth E. Herkenhoff[2], Colin M. Dundas[2]
Institution(s): *[1.] University of Arizona, Tucson, AZ. [2.] USGS Astrogeology Center, Flagstaff, AZ.*

203.08 The current impactor flux on Mars and its seasonal variation
Author(s): Youngmin JeongAhn[1], Renu Malhotra[1]
Institution(s): *[1.] University of Arizona, Tucson, AZ.*

203.09 Probing Mars' interior using seismic signals from small high-frequency meteorite impacts
Author(s): Nicholas A. Teanby[1], James Wookey[1]
Institution(s): *[1.] School of Earth Sciences, University of Bristol, Bristol, United Kingdom.*

204 Exoplanet Observations and Models

Tuesday, 10:30 am - 12:00 pm; Arizona Ballroom 7

Chair(s): Elizabeth Adams *(Cornell University)* **&**
Nader Haghighipour *(Univ. of Hawaii)*

204.01 Clouds and Atmospheric Dynamics in Ultracool Atmospheres: HST, Spitzer, and LBT Rotational Mapping of Exoplanets and Brown Dwarfs
Author(s): Daniel Apai[1]
Institution(s): *[1.] University of Arizona, Tucson, AZ.*
Contributing team(s): Extrasolar Storms team

204.02 The Debris Structures of HD 95086 – A Young Analog of HR 8799
Author(s): Kate Y. Su[1], Sarah J. Morrison[2], Renu Malhotra[2], Zoltan Balog[3], Paul S. Smith[1]
Institution(s): *[1.] Steward Observatory, Tucson, AZ. [2.] Lunar and Planetary Laboratory, Tucson, AZ. [3.] Max-Planck-Institute fur Astronomie, Heidelberg, Germany.*

204.03 The Planetary System of HD 95086—A Young Analog of HR 8799?
Author(s): Sarah J. Morrison[1], Renu Malhotra[1], Kate Y. L. Su[1]
Institution(s): *[1.] Univ. of Arizona, Tucson, AZ.*

204.04 Titan Reveals Transit Spectra of a Definitively Hazy World
Author(s): Tyler D. Robinson[1, 2], Luca Maltagliati[3], Mark S. Marley[1], Jonathan J. Fortney[4]
Institution(s): *[1.] NASA Ames Research Center, Moffett Field, CA. [2.] NAI Virtual Planetary Laboratory, Seattle, WA. [3.] Laboratoire d'Études Spatiales et d'Instrumentation en Astrophysique, Paris, France. [4.] Department of Astronomy and Astrophysics, Santa Cruz, CA.*

204.05D Refracted and Forward Scattered Light in Transmission Spectra and Transit Light Curves
Author(s): Amit Misra[1]
Institution(s): *[1.] University of Washington, Seattle, WA.*

204.06 The Thermal Emission and Albedo of Super-Earths with Flat Transmission Spectra
Author(s): Caroline Morley[1], Jonathan Fortney[1], Mark Marley[2]
Institution(s): *[1.] University of CA - Santa Cruz, Santa Cruz, CA. [2.] NASA Ames Research Center, Mountain View, CA.*

204.07 Escaping hydrogen from HD209458b
Author(s): Justin Erwin[1], Roger V. Yelle[1], Tommi T. Koskinen[1]
Institution(s): *[1.] Lunar and Planetary Lab, University of Arizona, Tucson, AZ.*

204.08 H? Absorption by Hot Jupiter Atmospheres
Author(s): Duncan Christie[1], Phil Arras[1], Zhi-Yun Li[1]
Institution(s): *[1.] Astronomy, University of Virginia, Charlottesville, VA.*

204.09D Quantifying Angular Momentum in Planetary Systems and Host Stars
Author(s): Stacy Irwin[1], Samuel T. Durrance[1]
Institution(s): *[1.] Florida Institute of Technology, Melbourne, FL.*

205 Moon/Mercury Surface

Tuesday, 10:30 am - 11:40 am; Arizona Ballroom 11/ 12

Chair(s): Melissa Lane *(Planetary Science Institute)* **&**
Thomas Morgan *(NASA/GSFC)*

205.01 Estimating the Sizes of Late Veneer Impactors from Impact-Induced Mixing on Mercury
Author(s): Edgard G. Rivera-Valentin[1, 2], Amy C. Barr[2]
Institution(s): *[1.] Arecibo Observatory, Arecibo, Puerto Rico. [2.] Brown University, Providence, RI.*

205.02 Hollow Promises: A Window into Mercury's Surface Mineralogy
Author(s): Faith Vilas[1], Deborah L. Domingue[1], Joern Helbert[2], Mario D'Amore[2], Noam R. Izenberg[3], Scott L. Murchie[3], Rachel L. Klima[3], Karen R. Stockstill-Cahill[4], Ann L. Sprague[5], William M. Vaughan[6], James W. Head[6]
Institution(s): *[1.] Planetary Science Institute, Tucson, AZ. [2.] DLR, Berlin, Germany. [3.] Johns Hopkins University Applied Physics Laboratory, Laurel, MD. [4.] Proxemy Research, Laytonsville, MD. [5.] Lunar and Planetary Laboratory, Tucson, AZ. [6.] Brown University, Providence, RI.*

205.03 Mid-infrared emission spectroscopy of meteorite NWA 7325: Identifying the mineralogy with a non-destructive, remote-sensing technique
Author(s): Melissa Lane[1], Cyrena Goodrich[1], Noriko Kita[2]
Institution(s): *[1.] Planetary Science Institute, Tucson, AZ. [2.] University of Wisconsin, Madison, WI.*

205.04 Mare Imbrium Regolith and Rock Information Retrieved from Imaging Spectrometer and Panorama Cameras onboard the Yutu Rover of Chang'E 3 Mission
Author(s): Hao Zhang[1], Weidong Jin[1], Ye Yuan[1], Yazhou Yang[1], Ziwei Wang[1], Long Xiao[1]
Institution(s): *[1.] China University of Geosciences, Wuhan, Hubei, China.*
Contributing team(s): The Payload Teams of Chang'E 3 Mission

205.05 Thermoelastic Grain-Scale Stresses on Airless Bodies and Implications for Rock Breakdown
Author(s): Jamie Molaro[1], Shane Byrne[1]
Institution(s): *[1.] Planetary Sciences, University of Arizona, Tucson, AZ.*

205.06 The gravity signature of mantle uplift from impact modeling craters on the Moon
Author(s): Colleen Milbury[1], Brandon C. Johnson[2], H. Jay Melosh[1], Gareth S. Collins[3], David M. Blair[1], Jason M. Soderblom[2], Maria T. Zuber[1]
Institution(s): *[1.] Earth, Atmospheric, and Planetary Sciences, Purdue University, West Lafayette, IN. [2.] Massachusetts Institute of Technology, Cambridge, MA. [3.] Imperial College London, London, United Kingdom.*

205.07 Re-examining the main asteroid belt as the primary source of ancient lunar craters.
Author(s): David A. Minton[1], James E. Richardson[2], Caleb I. Fassett[3]
Institution(s): *[1.] Purdue University, West Lafayette, IN. [2.] Arecibo Observatory, Arecibo, Puerto Rico. [3.] Mount Holyoke College, South Hadley, MA.*

Women in Planetary Science Luncheon

Tuesday, 12:00 pm - 1:30 pm; Arizona Ballroom 8

Join us for the annual DPS Women in Planetary Science event over lunch. Please feel free to bring any information/announcements related to women in astronomy and planetary science to share.
Organizer(s): Kelsi Singer *(Washington University in St. Louis)*

Presentation of the Harold C. Urey Prize and the Carl Sagan Medal

Tuesday, 1:30 pm - 1:45 pm; Tucson Ballroom E/F

Chair(s): Heidi Hammel *(AURA)*

206 Harold C. Urey Prize: After Imbrium, Before Babylon: Solar System's Middle Years, Matija Cuk (SETI)

Tuesday, 1:45 pm - 2:20 pm; Tucson Ballroom E/F

Chair(s): Heidi Hammel *(AURA)*

206.01 After Imbrium, Before Babylon: Solar System's Middle Years
Author(s): Matija Cuk[1]
Institution(s): *[1.] SETI Institute, Mountain View, CA.*

207 Plenary Talk: Science from the Lunar Atmosphere and Dust Environment Explorer Mission, Richard Elphic (NASA Ames Research Center)

Tuesday, 2:20 pm - 2:55 pm; Tucson Ballroom E/F

Chair(s): Andrew Steffl *(Southwest Research Institute)* **&**
Andrew Potter *(National Solar Obs.)*

207.01 Science from the Lunar Atmosphere and Dust Environment Explorer Mission
Author(s): Richard Elphic[1], Gregory Delory[2], Sarah Noble[3], Anthony Colaprete[1], Mihaly Horanyi[5], Paul Mahaffy[4], Mehdi Benna[4]
Institution(s): *[1.] NASA Ames Research Center, Moffett Field, CA. [2.] Space Sciences Laboratory, University of California, Berkeley, CA. [3.] Planetary Science Division, Science Mission Directorate, NASA, Washington, DC. [4.] NASA Goddard Space Flight Center, Greenbelt, MD. [5.] Laboratory for Atmospheric and Space Physics, University of Colorado, Boulder, CO.*
Contributing team(s): LADEE Science Team

208 Plenary Talk: The Moon in the UV, Amanda Hendrix (Planetary Science Institute)

Tuesday, 2:55 pm - 3:30 pm; Tucson Ballroom E/F

Chair(s): Andrew Steffl *(Southwest Research Institute)* **&**
Andrew Potter *(National Solar Obs.)*

208.01 The Moon in the UV
Author(s): Amanda Hendrix[1]
Institution(s): *[1.] Planetary Science Institute, Los Angeles, CA.*

209 Comets Posters

Tuesday, 3:30 pm - 6:00 pm; Star Circle Pavilion/Arizona Ballroom 6

Chair(s): Yanga Fernandez *(Univ. of Central Florida)*

209.01 Distant Coma Composition of Comet 67P/Churyumov-Gerasimenko as Observed from Rosetta/VIRTIS
Author(s): Dominique Bockelee-Morvan[1], Stephane Erard[1], Cedric Leyrat[1], Fabrizio Capaccioni[2], Gianrico Filacchione[2], Giuseppe Piccioni[2], Pierre Drossart[1], Vincent Debout[1], Nicolas Biver[1], Jacques Crovisier[1], Maria Cristina De Sanctis[2], Therese Encrenaz[1]
Institution(s): *[1.] Obs. de Meudon - Paris, Meudon, France. [2.] INAF-IAPS, Roma, Italy.*
Contributing team(s): VIRTIS Team

209.02 Comet 67P: surface temperature maps as derived by Rosetta/VIRTIS in the early Mapping phase
Author(s): Federico Tosi[1], Maria Teresa Capria[1], Fabrizio Capaccioni[1], Gianrico Filacchione[1], Maria Cristina De Sanctis[1], Stéphane Erard[2], Cedric Leyrat[2], Dominique Bockelee-Morvan[2], Ekkehard Kuehrt[3]
Institution(s): *[1.] INAF-IAPS, Istituto di Astrofisica e Planetologia Spaziali, Rome, Italy. [2.] LESIA, Observatoire de Paris/CNRS/UPMC/Université Paris-Diderot, Paris, France. [3.] Institute of Planetary Research, German Aerospace Center (DLR), Berlin, Germany.*
Contributing team(s): Rosetta/VIRTIS Team

209.03 COSIMA - Cometary Dust Analysis in the inner coma of Comet 67P/ Churyumov-Gerasimenko
Author(s): Martin Hilchenbach[1], Jochen Kissel[1], Christelle Briois[2], Hanna von Hoerner[3], Yves Langevin [4], Rita Schulz[5], Johan Silen[6], Kathrin Altwegg[7], Luigi Colangeli[5], Herve Cottin[8], Cecile Engrand[9], Albrecht Glasmachers[10], Eberhard Gruen[11], Gerhard Haerendel[12], Hartmut Henkel[3], Herwig Höfner[12], Klaus Hornung[13], Elmar Jessberger[14], Andreas Koch[3], Harry Letho[15], Kirsi Letho[15], Francois Raulin[8], Lena Le Roy[7], Jouni Rynö[6], Wolfgang Steiger [16], Thomas Stephan [17], Thirkell Laurent[2], Roger. Thomas[2], Klaus Torkar[18], Kurt Varmuza[19], Klaus Peter Wanczek[20]
Institution(s): *[1.] MPI für Sonnensystemforschung, Göttingen, Germany. [2.] CNRS / Université d'Orléans, Orléans, France. [3.] von Hoerner und Sulger GmbH, Schwetzingen, Germany. [4.] CNRS / Université Paris Sud, Paris, France. [5.] ESA Science Support Office, Noordwijk, Netherlands. [6.] Finnish Meteorological Institute, Helsinki, Finland. [7.] Universität Bern, Bern, Switzerland. [8.] UMR CNRS 7583, Université Paris Est Créteil et Université Paris Diderot, Paris, France. [9.] CSNSM, Orsay, France. [10.] Universität Wuppertal, Wuppertal, Germany. [11.] Max-Planck-Institut für Kernphysik, Heidelberg, Germany. [12.] Max-Planck-Institut für extraterrestrische Physik, Garching, Germany. [13.] Universität der Bundeswehr LRT-7, Neubiberg, Germany. [14.] Institut für Planetologie, Münster, Germany. [15.] University of Turku, Turku, Finland. [16.] RC Seibersdorf Research GmbH, Seibersdorf , Germany. [17.] University of Chicago, Chicago, IL. [18.] Institut für Weltraumforschung, Graz, Austria. [19.] Technische Universität Wien, Wien, Austria. [20.] Universität Bremen, Bremen, Germany.*

209.04 Comet 67P/CG: Preliminary Shape and Topography from SPC

Author(s): Robert W. Gaskell[1], Laurent Jorda[2], Eric Palmer[1], Coralie Jackman[3], Claire Capanna[2], Stubbe Hviid[4], Pedro Gutiérrez[5]

Institution(s): *[1.] Planetary Science Institute, Altadena, CA. [2.] Laboratoire d'Astrophysique de Marseille, Marseille, France. [3.] KinetX, Simi Valley, CA. [4.] Deutschen Zentrums für Luft- und Raumfahrt, Berlin, Germany. [5.] Instituto de Astrofísica de Andalucía, Granada, Spain.*

Contributing team(s): OSIRIS team

209.05 Expected constraints on the outer solar system formation conditions from the Rosetta-ROSINA measurements

Author(s): Olivier Mousis[1], Kathrin Altwegg[2], Jean-Loup Bertaux[3], Jean-Jacques Berthelier[3], Andre Bieler[4], Peter Bochsler[2], Christelle Briois[5], Ursina Calmonte[2], Michael R. Combi[4], Joan De Keyser[6], Frederik Dhooghe[6], Bjorn Fiethe[7], Stephen A. Fuselier[8], Sébastien Gasc[2], Fritz Gliem[7], Tamas I. Gombosi[4], Myrtha Haessig[8], Annette Jäckel[2], Axel Korth[9], Lena Le Roy[2], Urs Mall[9], Bernard Marty[10], Christian Mazelle[11], Tobias Owen[12], Henri Rème[11], Martin Rubin[2], Jean-André Sauvaud[11], Jack H. Waite[8], Peter Wurz[2]

Institution(s): *[1.] Institut UTINAM, Université de Franche-Comté, Besançon, France. [2.] University of Bern, Bern, Switzerland. [3.] Laboratoire Atmosphères, Milieux, Observations Spatiales, Paris, France. [4.] University of Michigan, Ann Arbor, MI. [5.] LPC2E, Orléans, France. [6.] Belgian Institute for Space Aeronomy, Brussels, Belgium. [7.] Technical University of Braunschweig, Braunschweig, Germany. [8.] Southwest Research Institute, San Antonio, TX. [9.] Max Planck Institute for Solar System Research, Katlenburg-Lindau, Germany. [10.] CRPG-CNRS, Université de Lorraine, Vandoeuvre les Nancy, France. [11.] IRAP, Toulouse, France. [12.] Univ Hawaii, Honolulu, HI.*

209.06 Three-dimensional kinetic modeling of the near coma of comet 67P/ Churyumov-Gerasimenko

Author(s): Valeriy Tenishev[1], Nicolas Fougere[1], Andre Bieler[1], Michael R. Combi[1], Tamas Gombosi[1], Kenneth Hansen[1], Kathrin Altwegg[2], Martin Rubin[2]

Institution(s): *[1.] Univ. of Michigan, Ann Arbor, MI. [2.] University of Bern, Bern, Switzerland.*

209.07 The Comet Radar Explorer Mission

Author(s): Erik Asphaug[1], Mike Belton[13], Dominique Bockelee-Morvan[7], Steve Chesley[2], Marco Delbo[8], Tony Farnham[5], Yonggyu Gim[2], Robert Grimm[14], Alain Herique[9], Wlodek Kofman[9], Juergen Oberst[6], Roberto Orosei[3], Sylvain Piqueux[2], Jeff Plaut[2], Mark Robinson[1], Paul Sava[10], Essam Heggy[2], William Kurth[11], Dan Scheeres[12], Brett Denevi[4], Elizabeth Turtle[4], Paul Weissman[2]

Institution(s): *[1.] ASU, Tempe, AZ. [2.] Jet Propulsion Laboratory, Pasadena, CA. [3.] INAF, Bologna, Italy. [4.] Applied Physics Laboratory, Laurel, MD. [5.] University of Maryland, College Park, MD. [6.] German Aerospace Center (DLR), Cologne, Germany. [7.] LESIA, Obs. Paris, Meudon, France. [8.] CNRS, Nice, France. [9.] CNRS, Grenoble, France. [10.] Colorado School of Mines, Golden, CO. [11.] University of Iowa, Iowa City, IA. [12.] University of Colorado, Boulder, CO. [13.] Kitt Peak National Observatory, Tucson, AZ. [14.] Southwest Research Institute, Boulder, CO.*

209.08 Results from the Worldwide Coma Morphology Campaign for Comet ISON (C/2012 S1)
Author(s): Nalin H. Samarasinha[1]
Institution(s): *[1.] Planetary Science Institute, Tucson, AZ.*
Contributing team(s): The ISON Coma Morphology Team*

209.09 Water and a deep search for HDO in the inner coma of C/2012 S1 (ISON) at 0.53 and 0.35 AU from the Sun
Author(s): Erika L. Gibb[1], Boncho P. Bonev[2, 3], Michael A. DiSanti[2], Michael J. Mumma[2], Geronimo L. Villanueva[3, 2], Lucas Paganini[3, 2]
Institution(s): *[1.] Univ. of Missouri - St. Louis, Saint Louis, MO. [2.] NASA Goddard Center for Astrobiology, Greenbelt, MD. [3.] Catholic University of America, Greenbelt, MD.*

209.10 Water Ice in the Comae of Comets C/2013 A1 (Siding Spring) and C/2012 S1 (ISON)
Author(s): Michael S. Kelley[1], Silvia Protopapa[1], Jian-Yang Li[2], Charles E. Woodward[3]
Institution(s): *[1.] Univ. of Maryland, College Park, MD. [2.] Planetary Science Institute, Tucson, AZ. [3.] Univ. of Minnesota, Minneapolis, MN.*

209.11 Radio OH Observations of Recent Bright Comets from Arecibo
Author(s): Amy J. Lovell[1], Ellen S. Howell[2]
Institution(s): *[1.] Agnes Scott College, Decatur, GA. [2.] Arecibo Observatory / USRA, Arecibo, Puerto Rico.*

209.12 The Production and Release of Volatiles in Comets
Author(s): Neil Dello Russo[1], Ronald J. Vervack[1], Hideyo Kawakita[2]
Institution(s): *[1.] JHU-APL, Laurel, MD. [2.] Koyama Astronomical Observatory, Kyoto Sangyo University, Kyoto, Japan.*

209.13 The Chemical Composition of Comet C/2012 S1 (ISON) between 1.2 and 0.35 AU of the Sun
Author(s): Michael A. DiSanti[1, 2], Boncho P. Bonev[2, 3], Erika L. Gibb[2, 4], Geronimo L. Villanueva[2, 3], Lucas Paganini[2, 3], Michael J. Mumma[1, 2], Jacqueline V. Keane[5], Karen J. Meech[5], Geoff A. Blake[2, 6], Adam J. McKay[7]
Institution(s): *[1.] NASA's GSFC, Greenbelt, MD. [2.] Goddard Ctr for Astrobiology, Greenbelt, MD. [3.] Catholic University of America, Washington, DC. [4.] U. Missouri-St. Louis, St. Louis, MO. [5.] U. Hawaii NASA Astrobiology Institute, Honolulu, HI. [6.] California Inst. of Technology, Pasadena, CA. [7.] U. Texas/McDonald Observatory, Austin, TX.*

209.14 High-Dispersion Spectroscopic Observations of Comet C/2012 S1 (ISON) with the Subaru Telescope
Author(s): Yoshiharu Shinnaka[1, 2], Hideyo Kawakita[1, 2], Masayoshi Nagashima[1], Kobayashi Hitomi[2], Alice Decock[3], Emmanuel Jehin[3], Daniel C. Boice[4]
Institution(s): *[1.] Kyoto Sangyo University, Kyoto, Kyoto, Japan. [2.] Koyama Astronomical Observatory, Kyoto, Kyoto, Japan. [3.] Universite de Liege, Liege, Liege, Belgium. [4.] Sientific Studies and Consulting, San Antonio, TX.*

209.15 The Puzzle of HCN in Comets: Is it both a Product and a Primary Species?
Author(s): Michael J. Mumma[1], Boncho P. Bonev[1, 2], Steven B. Charnley[1], Martin A. Cordiner[1, 2], Michael A. DiSanti[1], Erika L. Gibb[3], Karen Magee-Sauer[4], Lucas Paganini[1, 2], Geronimo L. Villanueva[1, 2]
Institution(s): *[1.] NASA's GSFC, Greenbelt, MD. [2.] Catholic University of America, Washington, DC. [3.] University of Missouri, St. Louis, MO. [4.] Rowan University, Glassboro, NJ.*

209.16 High Resolution Near-Infrared Spectroscopy of Comet C/2013 R1 (Lovejoy) using WINERED at Koyama Astronomical Observatory
Author(s): Hideyo Kawakita[1], Yoshiharu Shinnaka[1], Sayuri Ogawa[1], Hitomi Kobayashi[2], Sohei Kondo[1], Kenshi Nakanishi[1], Takafumi Kawanishi[1], Tetsuya Nakaoka[1], Shogo Otsubo[1], Masaomi Kinoshita[1], Yuji Ikeda[1, 4], Ryo Yamamoto[3], Natsuko Izumi[3], Kei Fukue[3], Satoshi Hamano[3], Chikako Yasui[3], Hiroyuki Mito[3], Noriyuki Matsunaga[3], Naoto Kobayashi[3]
Institution(s): *[1.] Kyoto Sangyo Universitiy Koyama Astronomical Observatory, Kyoto, Kyoto, Japan. [2.] Kyoto-Nijikoubou, Kyoto, Kyoto, Japan. [3.] University of Tokyo, Hongo, Bunkyo, Japan. [4.] Photocoding, Kyoto, Kyoto, Japan.*

209.17 The Spatial Distributions of Daughter Species in Comet C/2013 R1 (Lovejoy)
Author(s): Sayuri Ogawa[1], Yoshiharu Shinnaka[1], Daniel C. Boice[2, 3], Hideaki Fujiwara[4], Reiko Furusho[5], Hideyo Kawakita[1], Hitomi Kobayashi[1], Jun-ichi Watanabe[4], Masafumi Yagi[4], Michitoshi Yoshida[6]
Institution(s): *[1.] Kyoto Sangyo University, Kyoto, Kyoto, Japan. [2.] Scientific Studies and Consulting, San Antonio, TX. [3.] Trinity University, San Antonio, TX. [4.] National Astronomical Observatory of Japan, Mitaka, Tokyo, Japan. [5.] Tsuru University, Tsuru, Yamanashi, Japan. [6.] Hirosima University, Higashi-Hiroshima , Hiroshima, Japan.*

209.18 Synergy Between Astrochemical Models and Cometary Taxonomies of Parent Volatiles
Author(s): Boncho P. Bonev[1, 2], Karen Willacy[3], Michael J. Mumma[1], Erika L. Gibb[4], Tom Millar[5], Steve Charnley[1], Michael A. DiSanti[1], Geronimo L. Villanueva[2, 1], Lucas Paganini[2, 1]
Institution(s): *[1.] NASA Goddard Center for Astrobiology, Greenbelt, MD. [2.] Catholic University of America, Greenbelt, MD. [3.] California Institute of Technology, Pasadena, CA. [4.] University of Missouri - St. Louis, St. Louis, MO. [5.] Queen's University Belfast, Belfast, Northern Ireland, United Kingdom.*

209.19 Study of the Comet C/2013 A1 (Siding Spring)
Author(s): Alberto Q. Vodniza[1], Mario R. Pereira[1]
Institution(s): *[1.] Physics, University of Narino Observatory, Pasto, Narino, Colombia.*

209.20 Coma Morphology of Recent Comets: C/ISON (2012 S1), C/Pan-STARRS (2012 K1), C/Jacques (2014 E2), and C/Siding Spring (2013 A1)
Author(s): Matthew M. Knight[1], David G. Schleicher[1]
Institution(s): *[1.] Lowell Observatory, Flagstaff, AZ.*

209.21 The TRAPPIST comet survey in 2014
Author(s): Emmanuel Jehin[1], Cyrielle Opitom[1], Jean Manfroid[1], Damien Hutsemékers[1], Michael Gillon[1]
Institution(s): *[1.] Institut d'Astrophysique et de Géophysique, Université de Liège, Liege, Belgium.*

209.22 Impact-Induced Shock-Stress Effects in Cometary Analogue Olivine, Pyroxene, Carbonate and Serpentine Minerals
Author(s): Susan M. Lederer[1], Elizabeth A. Jensen[2], Michael Fane[3], Cierra Strojia[3], Douglas C. Smith[3], Lindsay P. Keller[1], Sean S. Lindsay[4], Diane H. Wooden[5], Mark J. Cintala[1], Michael E. Zolensky[1]
Institution(s): *[1.] NASA Johnson Space Center, Houston, TX. [2.] Planetary Science Institute, Tucson, AZ. [3.] Cal State Univ SB, San Bernardino, CA. [4.] Univ of Oxford, Oxford, Oxfordshire, United Kingdom. [5.] NASA Ames Rearch Center, Palo Alto, CA.*

209.23 Visible and Infrared Study of Comet 2P/Encke's Nucleus During Its 2013 Apparition
Author(s): Yanga R. Fernandez[1], Beatrice E. Mueller[2], Nalin H. Samarasinha[2], Laura M. Woodney[3], Paul A. Abell[4]
Institution(s): *[1.] Univ. of Central Florida, Orlando, FL. [2.] Planetary Science Institute, Tucson, AZ. [3.] California State University - San Bernardino, San Bernardino, CA.*
[4.] NASA/Johnson Space Center, Houston, TX.

209.24 Radar images of Comet 209P/LINEAR: Constraints on shape and rotation
Author(s): Ellen S. Howell[1], Michael C. Nolan[1], Patrick A. Taylor[1], Alessondra Springmann[3], Linda Rodriguez-Ford[1], Luisa F. Zambrano-Marin[1], Lance A. Benner[2], Marina Brozovic[2], Jon D. Giorgini[2], Carl Hergenrother[3]
Institution(s): *[1.] Arecibo Observatory/USRA, Arecibo, Puerto Rico. [2.] Jet Propulsion Lab, Pasadena, CA. [3.] University of Arizona, Tucson, AZ.*

209.25 Visible lightcurve observations of comet 46P/Wirtanen from 2014
Author(s): Beatrice E. Mueller[1], Nalin H. Samarasinha[1]
Institution(s): *[1.] Planetary Science Institute, Tucson, AZ.*

209.26 The Photometric lightcurve of Comet 1P/Halley
Author(s): Allison N. Bair[1], David G. Schleicher[1]
Institution(s): *[1.] Lowell Observatory, Flagstaff, AZ.*

209.27 Outflow Velocities of Dust as a Function of Time in the Coma of Comet 1P/Halley
Author(s): Cassandra Lejoly[1], Nalin H. Samarasinha[1], David G. Schleicher[2], Lujendra Ojha[1]
Institution(s): *[1.] Planetary Science Institute, Tucson, AZ. [2.] Lowell Observatory, Flagstaff, AZ.*

209.28 Jet Morphology and Coma Analysis of 103P/Hartley 2: Temporal Evolution and Interspecies Comparisons
Author(s): Charles M. Vaughan[1], Donna M. Pierce[1], Anita L. Cochran[2]
Institution(s): *[1.] Mississippi State University, Mississippi State, MS. [2.] University of Texas, McDonald Observatory, TX.*

209.29 Development of the Deep Impact Ejecta Based on Early MRI Images
Author(s): Lev Nagdimunov[1], Kolokolova Ludmilla1, Michael Wolff[2,] Michael F. A'Hearn[1], Tony Farnham[1]
Institution(s): *[1.] University of Maryland, College Park, MD. [2.] Space Science Institute, Boulder, CO.*

209.30 Naturally Occurring Outbursts at Comet Tempel 1
Author(s): Mark J. Moretto[1], Lori M. Feaga[1], Michael F. A'Hearn[1], Silvia Protopapa[1], Jessica M. Sunshine[1], Tony L. Farnham[1]
Institution(s): *[1.] University of Maryland, College Park, MD.*

209.31 Demonstration of the Capabilities of CometCIEF: A Web-based Image Enhancement Facility to Enhance Images of Cometary Comae
Author(s): Michael Patrick Martin[1, 2], Nalin Samarasinha[1], Steve Larson[2]
Institution(s): *[1.] Planetary Science Institute, Tucson, AZ. [2.] University of Arizona, Tucson, AZ.*

209.32 Dynamical Behavior of the Oort Cloud New Comets in Planetary Region
Author(s): Takashi Ito[1], Arika Higuchi[2]
Institution(s): *[1.] National Astronomical Observatory, Mitaka, Tokyo, Japan. [2.] Tokyo Institute of Technology, Meguro, Tokyo, Japan.*

209.33 Organic ices in the coma of comet C/2012 S1 (ISON) at heliocentric distances greater than 4 AU?
Author(s): Gian-Paolo Tozzi[1], Sara Faggi[1], John R. Brucato[1], Ivan Bruni[2], Javier Licandro[3], Elena Mazzotta Epifani[4], Karen Meech[5], Stefano Mottola[6], Makoto Watanabe[7]
Institution(s): *[1.] INAF - Osservatorio di Arcetri, Firenze, Italy. [2.] INAF- Osservatorio di Bologna, Bologna, Italy. [3.] IAC, La Laguna, Spain. [4.] INAF - Osservatorio di Capodimonte, Napoli, Italy. [5.] IFA - Univ. of Hawaii, Honolulu, HI. [6.] DLR, Berlin, Germany. [7.] Hokkaido Univ., Hokkaido, Japan.*

209.34 Using an integral-field unit spectrograph to study radical species in cometary coma
Author(s): Benjamin Lewis[1], Donna Pierce[1], Anita Cochran[2], Charles Vaughan[1]
Institution(s): *[1.] Physics and Astronomy, Mississippi State University, Starkville, MS. [2.] McDonald Observatory, Austin, TX.*

210 Exoplanet Posters

Tuesday, 3:30 pm - 6:00 pm; Star Circle Pavilion/Arizona Ballroom 6

Chair(s):

210.01 A Survey for Very Short-Period Planets in the Kepler Data
Author(s): Elisabeth R. Adams[1], Brian Jackson[2], Michael Endl[3], Christopher C. Stark[4], John Chambers[5], Drake Deming[6]
Institution(s): *[1.] Planetary Science Institute, Tucson, AZ. [2.] Boise Statue University, Boise, ID. [3.] University of Texas at Austin, Austin, TX. [4.] NASA Goddard Space Flight Center, Greenbelt, MD. [5.] Carnegie Institution for Science, Washington, DC. [6.] University of Maryland at College Park, College Park, MD.*

210.02 Upper Limits for Rings Around Exoplanets from Kepler Data
Author(s): William T. Hatchett[1], Jason W. Barnes[1]
Institution(s): *[1.] University of Idaho, Moscow, ID.*

210.03 Characterizing Extrasolar Planets from Transit Light Curves obtained at the Universidad de Monterrey Observatory
Author(s): Pedro V. Sada[1], Felipe G. Ramón-Fox[2]
Institution(s): *[1.] Universidad de Monterrey, Monterrey, Nuevo Leon, Mexico. [2.] Instituto de Astronomía UNAM, Ensenada, Baja California, Mexico.*

210.04 The San Pedro Mártir Transit Observations Program
Author(s): Davide Ricci[1], Gerardo Rámon Fox[1], Carmen Ayala[1], Samuel Navarro[1], Samantha Brown Sevilla[2], Lester Fox Machado[1], Salvador Curiel[3], Raul Michel[1], Mauricio Reyes[1]
Institution(s): *[1.] UNAM, Ensenada, Baja California, Mexico. [2.] BUAP, Puebla, Puebla, Mexico. [3.] UNAM, Mexico City, D.F., Mexico.*

210.05 Using CLOUDY to investigate the physical characteristics in the vicinity of transiting hot Jupiters
Author(s): Jake Turner[1], Duncan Christie[1], Robert Johnson[1], Phil Arras[1]
Institution(s): *[1.] University of Virginia, Charlottesville, VA.*

210.06 Exoplanet Observation from the Vattican Observatory
Author(s): Kyle Pearson[1], Rob Zellem[2], Caitlin Griffith[2]
Institution(s): *[1.] Northern Arizona University, Flagstaff, AZ. [2.] Lunar and Planetary Laboratory, Tucson, AZ.*

210.07 The Effect of Rotation Rate on Seasonally Migrating Tropical Precipitation Zones on Terrestrial Planets
Author(s): Sean P. Faulk[1], Jonathan L. Mitchell[1], Simona Bordoni[2]
Institution(s): *[1.] Department of Earth, Planetary, and Space Sciences, University of California Los Angeles, Los Angeles, CA. [2.] California Institute of Technology, Pasadena, CA.*

210.08 Hot Jupiter Radii: A Turbulent History
Author(s): Andrew N. Youdin[1], Thaddeus D. Komacek[2]
Institution(s): *[1.] Steward Observatory, University of Arizona, Tucson, AZ. [2.] Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ.*

210.09 Atmospheric Dynamics of Brown Dwarfs and Directly Imaged Giant Planets: Emergence of Zonal Jets and Eddies from Small-Scale Convective Perturbations
Author(s): Adam P. Showman[1], Xi Zhang1, Xianyu Tan[1], Nikole K. Lewis[2]
Institution(s): *[1.] University of Arizona, Tucson, AZ. [2.] Space Telescope Science Institute, Baltimore, MD.*

210.10 Spectroscopic analysis of the ?17 band of C2H5D at 770 - 850 cm-1
Author(s): Adam Daly[1], Brian J. Drouin[1], Linda R. Brown[1], John C. Pearson[1], Keeyoon Sung[1], Peter Groner[2], Arlan W. Mantz[3], Mary Ann H. Smith[4]
Institution(s): *[1.] Earth Science, Jet Propulsion Laboratory, Pasadena, CA. [2.] Department of Chemistry, University of Missouri , Kansas City, MO. [3.] Dept. of Physics, Astronomy and Geophysics, Connecticut College, New London, CT. [4.] Science Directorate, NASA Langley Research Center, Hampton, VA.*

210.11 Equilibrium Chemistry Calculations for Model Hot-Jupiter Atmospheres
Author(s): Sarah Blumenthal[1], Joseph Harrington[1], M. Oliver Bowman[1], Jasmina Blecic[1]
Institution(s): *[1.] Planetary Sciences, University of Central Florida, Orlando, FL.*

210.12 Observation and Analysis of Secondary Eclipses of WASP-32b
Author(s): Justin Garland[1], Joesph Harrington[1], Patricio Cubillos[1], Jasmina Blecic[1], Andrew S. Foster[1], Matthew O. Bowman[1], Pierre F. L. Maxted[2]
Institution(s): *[1.] Planetary Sciences, University of Central Florida, Orlando, FL. [2.] Keele University, Keele, Staffordshire, United Kingdom.*

210.13 Analysis of Secondary Eclipse Observations of Exoplanet WASP-34b
Author(s): Ryan Challener[1], Joseph Harrington[1], Justin Garland[1], Patricio Cubillos[1], Jasmina Blecic[1], Barry Smalley[2]
Institution(s): *[1.] University of Central Florida, Orlando, FL. [2.] Keele University, Keele, Staffordshire, United Kingdom.*

210.14 Secondary Eclipse Observations of the Hot-Jupiter HAT-P-30-WASP-51b
Author(s): Andrew S. Foster[1], Joseph Harrington[1], Patricio Cubillos[1], Justin Garland[1]
Institution(s): *[1.] University of Central Florida, Orlando, FL.*

210.15 The Dynamics of known Short-period Multi-planet Systems in the Presence of Outer Planets
Author(s): Agueda P. Granados Contreras[1], Aaron C. Boley[1]
Institution(s): *[1.] Physics and Astronomy, University of British Columbia, Vancouver, BC, Canada.*

210.16 The dynamical structure of the HR8799 inner debris disk
Author(s): Robert A. Wittenmyer[1], Bruna Contro de Godoy[1, 3], Jonathan Horner[2], Jonathan P. Marshall[1]
Institution(s): *[1.] UNSW Australia, Sydney, NSW, Australia. [2.] University of Southern Queensland, Toowoomba, QLD, Australia. [3.] Universidade Estadual Paulista "Júlio de Mesquita Filho" , Sao Paulo, Sao Paulo, Brazil.*

210.17 The Arecibo Reconnaissance of Radio Emission from Nearby Extrasolar Planets
Author(s): Matthew Route[1, 2], Alex Wolszczan[1, 2]
Institution(s): *[1.] Pennsylvania State University, University Park, PA. [2.] Center for Exoplanets and Habitable Worlds, University Park, PA.*

210.18 Pale Orange Dots: Hazy Archean Earth as an Analog for Hazy Earthlike Exoplanets
Author(s): Giada Arney[1, 2], Shawn Domagal-Goldman[3, 2], Victoria S. Meadows[1, 2], Mark Claire[4, 2], Edward Schwieterman[1, 2]
Institution(s): *[1.] University of Washington, Seattle, WA. [2.] Virtual Planetary Laboratory, Seattle, WA. [3.] NASA's Goddard Space Flight Center, Greenbelt, MD. [4.] University of St. Andrews, St. Andrews, Scotland, United Kingdom.*

210.20 The NASA Exoplanet Exploration Program
Author(s): Douglas M. Hudgins[1], Gary Blackwood[2], John Gagosian[1]
Institution(s): *[1.] NASA Headquarters, Washington, DC. [2.] Jet Propulsion Laboratory, Pasadena, CA.*

210.21 Geometric effects of Circumbinary Planets
Author(s): Anna K. Shahady[1], Darin Ragozzine[1]
Institution(s): *[1.] Physics and Space Sciences, Florida Institute of Technology, Palm Bay, FL.*

211 Titan Posters

Tuesday, 3:30 pm - 6:00 pm; Star Circle Pavilion/Arizona Ballroom 6

Chair(s): Rosaly Lopes *(JPL)*

211.01 Cassini UVIS Solar Zenith Angle Studies of Titan Dayglow Based on N2 High Resolution Spectroscopy
Author(s): Joseph Ajello[1], Robert West[1], Greg Holsclaw[2], Emilie Royer[2], Alan Heays[3], Todd Bradley[4], Michael Stevens[5]
Institution(s): *[1.] JPL, Pasadena, CA. [2.] University of Colorado, Boulder, CO. [3.] Leiden University, Leiden, Netherlands. [4.] University of Central Florida, Orlando, FL. [5.] Naval Research Laboratory, Washington DC, DC.*

211.02 Atmospheric Profiles of Titan's High-Altitude Haze: Cassini UVIS Stellar Occultation Measurements
Author(s): Joshua A. Kammer[1], Donald E. Shemansky[2], Yuk L. Yung[1]
Institution(s): *[1.] California Institute of Technology, Pasadena, CA. [2.] Space Environment Technologies, Altadena, CA.*

211.03 The Effect of Saturn's Gravitational Tide on Superrotation in Titan's Atmosphere
Author(s): Andrew J. Friedson[1]
Institution(s): *[1.] Jet Propulsion Laboratory, Calif. Inst. Technology, Pasadena, CA.*

211.04 Temperature-dependent cross sections of benzene (C6H6) in the 7 – 15 µm region for Titan studies
Author(s): Keeyoon Sung[1], Geoffrey C. Toon[1], Timothy J. Crawford[1], Linda R. Brown[1]
Institution(s): *[1.] Jet Propulsion Laboratory, Pasadena, CA.*

211.05 Nitrogen incorporation in Titan's tholins inferred from high resolution orbitrap mass spectrometry
Author(s): Thomas Gautier[1, 2], Nathalie Carrasco[2, 3], Isabelle Schmitz-Afonso[4], David Touboul[4], Arnaud Buch[5], Pascal Pernot[6]
Institution(s): *[1.] NASA Postdoctoral Program (ORAU) at GSFC, Greenbelt, MD. [2.] Universite de Versailles St Quentin, LATMOS, UPMC, CNRS, Guyancourt, France. [3.] Institut Universitaire de France, Paris, France. [4.] Centre de recherche de Gif, ICSN, CNRS, Gif-sur-Yvette, France. [5.] LGPM, Ecole Centrale Paris, Chatenay-Malabry, France. [6.] Laboratoire de Chimie Physique, Universite Paris-Sud 11, CNRS, Orsay, France.*

211.06 An updated photochemical model of the atmosphere of Titan for astrobiology
Author(s): Karen Willacy[1], Mark Allen[1, 2], Yuk Yung[2]
Institution(s): *[1.] JPL, Pasadena, CA. [2.] California Institute of Technology, Pasadena, CA.*

211.07 The Non-LTE Model of IR Emissions of Methane in the Titan's Atmosphere
Author(s): Alexander Kutepov[1], Ladislav Rezac[2], Michael Rey[3], Andrei Nikitin[4], Corinne Boursier[5]
Institution(s): *[1.] The Catholic University of America, Washigton, DC. [2.] Max-Planck-Institut für Sonnensystemforschung, Göttingen, Germany. [3.] Université de Reims/CNRS, Reims, France. [4.] V.E. Zuev Institute of Atmospheric Optics, RAN, Tomsk, Russian Federation. [5.] Université Pierre et Marie Curie/CNRS, Paris, France.*

211.08 Titan's Hydrocarbon Zoo: Detection of Propene and the Search for Structural Isomers
Author(s): Conor A. Nixon[1], Donald E. Jennings[1], Bruno Bezard[2], Sandrine Vinatier[2], Nicholas Teanby[3], Keeyoon Sung[4], Todd M. Ansty[5], Patrick G. Irwin[6], Nicolas Gorius[7], Valeria Cottini[8], Athena Coustenis[2], Michael Flasar[1]
Institution(s): *[1.] NASA GSFC, Greenbelt, MD. [2.] LESIA/Paris Obs., Paris, F-92195, France. [3.] University of Bristol, Bristol, BS8 1RJ, United Kingdom. [4.] JPL, Pasadena, CA. [5.] Cornell University, Ithaca, NY. [6.] University of Oxford, Oxford, OX1 3PU, United Kingdom. [7.] Catholic University, Washington, DC. [8.] University of Maryland, College Park, MD.*
Contributing team(s): Cassini CIRS Team

211.09 Characteristics of the 5-?m-bright spectral unit from spectral analysis of Tui Regio
Author(s): Shannon MacKenzie[1], Jason W. Barnes[1]
Institution(s): *[1.] University of IDaho, Moscow, ID.*

211.10 Temporal changes of mid-latitude surface regions on Titan
Author(s): Anezina Solomonidou[1, 2], Athena Coustenis[2], Rosaly M. Lopes[1], Sebastien Rodriguez[4], Mathieu Hirtzig[3, 2], Katrin Stephan[5], Christophe Sotin[1], Pierre Drossart[2], Stephane Le Mouélic[6], Kenneth Lawrence[1], Ralf Jaumann[5], Robert H. Brown[7], Emmanuel Bratsolis[8]
Institution(s): *[1.] NASA Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA. [2.] LESIA- Observatoire de Paris, Paris, France. [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.] Université de Nantes, Laboratoire de Planétologie et Géodynamique, Nantes, France. [7.] Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ. [8.] Department of Physics, University of Athens, Athens, Greece.*

211.11 Titan's Haze Uncertainties and their Effects on Derived Surface Albedos
Author(s): Tymon Khamsi[1], Caitlin A. Griffith[1], Lyn Doose[1]
Institution(s): *1. University of Arizona, Tucson, AZ.*

211.12 Measurements of Dune Parameters on Titan Suggest Differences in Sand Availability
Author(s): Brigitte W. Stewart[1], Jani Radebaugh[1]
Institution(s): *[1.] Brigham Young University, Provo, UT.*

211.13 Methane Line Intensities: Near and Far IR
Author(s): Linda R. Brown[1], V. Malathy Devi[2], Edward H. Wishnow[3], Keeyoon Sung[1], Timothy J. Crawford[1], Arlan W. Mantz[4], Mary Ann H. Smith[5], Adriana Predoi-Cross[6], D. Chris Benner[2]
Institution(s): *[1.] Jet Propulsion Laboratory, Pasadena, CA. [2.] The College of William and Mary, Williamsburg, VA. [3.] University of California, Berkeley, CA. [4.] Connecticut College, New London, CT. [5.] NASA Langley Research Center, Hampton, VA. [6.] University of Lethbridge, Lethbridge, AB, Canada.*

211.14 Mapping Titan's Undifferentiated Plains ("Blandlands") to infer their origin
Author(s): Rosaly M. Lopes[1], Michael J. Malaska[1], Ashley M. Schoenfeld[2], Alice LeGall[3], Alexander G. Hayes[4], Samuel P. Birch[4], Anezina Solomonidou[1]
Institution(s): *[1.] JPL, Pasadena, CA. [2.] University of California Berkeley, Berkeley, CA. [3.] LATMOS, Universite Versailles Saint Quentin, Guyancourt, France. [4.] Cornell University, Ithaca, NY.*
Contributing team(s): Cassini RADAR Team

211.15 Geomorphology of Afekan Crater, Titan: Terrain Relationships in Titan's Blandlands
Author(s): Michael Malaska[1], Ashley M. Shoenfeld[2], Rosaly M. Lopes[1], Alex G. Hayes[3], Alice Le Gall[4], Sam Birch[3], Anezina Solomonidou[1], Catherine D. Neish[5], Jason M. Soderblom[6], Thomas G. Farr[1]
Institution(s): *[1.] Jet Propulsion Laboratory/California Institute of Technology, Pasadena, CA. [2.] Univeristy of California, Berkeley, Berkeley, CA. [3.] Cornell University, Ithaca, NY. [4.] UVSQ CNRS Paris VI, Guyahcourt, France. [5.] Florida Institute of Technology, Melbourne, FL. [6.] Massachusetts Institute of Technology, Cambridge, MA.*

211.16 Seasonal variations in Titan's middle atmosphere of Titan during the northern spring derived from Cassini/CIRS observations
Author(s): Sandrine Vinatier[1], Bruno Bézard[1], Sébastien Lebonnois[2], Nick Teanby[3], Richard Achterberg[4, 5], Remco de Kok[6], Donalds Jennings[5]
Institution(s): *[1.] LESIA, Obs. de Paris-Meudon, Meudon, Cedex, France, France. [2.] Laboratoire de Météorologie Dynamique, Paris, France. [3.] School of Earth Science, Bristol, United Kingdom. [4.] Department of Astronomy, College Park, MD. [5.] NASA Goddard Space Flight Center, Greenbelt, MD. [6.] SRON Netherlands Institue for Space Research, Utrecht, Netherlands.*
Contributing team(s): CIRS Team

211.17 Examining the Exobase Approximation: DSMC models of Titan's Thermosphere
Author(s): Orenthal Tucker[1], Valeriy M. Tenishev[2], Robert E. Johnson[1], William C. Waalkes[1], Michael R. Combi[1], Andrew F. Nagy[1]
Institution(s): *[1.] University of Michigan, Ann Arbor, MI. [2.] University of Virginia, Charlottesville, VA.*

211.18 The Effect of N2 Photoabsorption Cross Section Resolution on C2H6 Production in Titan's Ionosphere
Author(s): Adrienn Luspay-Kuti[1], Kathleen E. Mandt[1], Sylvain Plessis[2], Thomas K. Greathouse[1]
Institution(s): *[1.] Space Science and Engineering, Southwest Research Institute, San Antonio, TX. [2.] ICES, University of Texas at Austin, Austin, TX.*

211.19 ALMA observations of Titan
Author(s): Raphael Moreno[1], Emmanuel Lellouch[1], Sandrine Vinatier[1], Mark A. Gurwell[2], Luisa M. Lara[3], Arielle Moullet[4], Taufiq Hidayat[5]
Institution(s): *[1.] LESIA, Obs. Paris-Meudon, Meudon, France. [2.] Harvard-Smithsonian CfA,, Harvard, MA. [3.] IAA-CSIC, Granada, Spain. [4.] NRAO, Charlottesville, VA. [5.] Bandung Observatory, Bandung, Indonesia.*

212 Education Posters

Tuesday, 3:30 pm - 6:00 pm; Star Circle Pavilion/Arizona Ballroom 6

Chair(s): Sanlyn Buxner *(University of Arizona)* **&**
Larry Lebofsky *(University of Arizona)*

212.01 DPS Listing of Planetary Science Graduate Programs: A Resource for Students and Advisors
Author(s): David R. Klassen[1], Anthony Roman[2], Brian Jackson[3], Nick Schneider[4]
Institution(s): *[1.] Rowan Univ., Glassboro, NJ. [2.] Space Telescope Science Institute, Baltimore, MD. [3.] Boise State University, Boise, ID. [4.] University of Colorado, Boulder, CO.*

212.02 Guides, Tools, and Clearinghouses: A Presentation of Resources for Scientists Involved in Education and Public Outreach

Author(s): Jennifer A. Grier[1], Sanlyn Buxner[2], Bonnie Meinke[3], Nick Gross[4], Morgan Woroner[5]

Institution(s): *[1.] Planetary Science Institute, Columbia, MD. [2.] Planetary Science Institute, Tucson, AZ. [3.] Space Telescope Science Institute, Baltimore, MD. [4.] Boston University, Boston, MA. [5.] IGES, Arlington, VA.*

212.03 Soliciting Your Thoughts on Supporting Scientists in Education and Public Outreach Efforts

Author(s): Sanlyn Buxner[1], Jennifer Grier[1], Stephanie Shipp[2], Bonnie Meinke[3], Nick Schneider[4]

Institution(s): *[1.] Planetary Science Institute, Tucson, AZ. [2.] Lunar and Planetary Institute, Houston, TX. [3.] Space Telescope Science Institute, Baltimore, MD. [4.] University of Colorado, Boulder, CO.*

Contributing team(s): SMD Planetary Science E/PO Forum Team

212.04 Online Workspace to Connect Scientists with NASA's Science E/PO Efforts and Practitioners

Author(s): Stephanie Shipp[1], Lindsay Bartolone [2], Laura Peticolas[3], Morgan Woroner[4], Heather Dalton[1], Theresa Schwerin[4], Denise Smith[5]

Institution(s): *[1.] Education and Public Outreach, Lunar and Planetary Institute, Houston, TX. [2.] Adler Planetarium, Chicago, IL. [3.] University of California, Berkeley, Berkeley, CA. [4.] Institute for Global Environmental Strategies, Arlington, VA. [5.] Space Telescope Institute , Baltimore, MD.*

212.05 Providing Effective Professional Development for Teachers through the Lunar Workshops for Educators

Author(s): Marti Canipe[1], Sanlyn Buxner[2], Andrea Jones[3], Brooke Hsu[4], Andy Shaner[5], Lora Bleacher[6]

Institution(s): *[1.] Planetary Science Institute, Tucson, AZ. [2.] Planetary Science Institute, Tucson, AZ. [3.] Lunar and Planetary Institute, Greenbelt, MD. [4.] AS&D, Inc., Greenbelt, MD. [5.] Lunary and Planetary Institute, Houston, TX. [6.] NASA Goddard Space Flight Center, Greenbelt, MD.*

212.06 Investigating Visitors' and Facilitators' Experiences at International Observe the Moon Night Events

Author(s): Matthew Wenger[1], Sanlyn Buxner[1], Andrea Jones[2], Brooke Hsu[4], Andy Shaner[3], Lora Bleacher[5], Brian Day[6]

Institution(s): *[1.] Planetary Science Institute, Tucson, AZ. [2.] Lunar and Planetary Institute, Greenbelt, MD. [3.] Lunar and Planetary Institute, Houston, TX. [4.] AS&D, Inc., Greenbelt, MD. [5.] NASA Goddard Space Flight Center, Greenbelt, MD. [6.] NASA Ames Research Center, Moffett Field, CA.*

212.07 Communicating Science on YouTube and Beyond: OSIRIS-REx Presents 321Science!
Author(s): Anna H. Spitz[1], Melissa Dykhuis[1], Symeon Platts[1], James T. Keane[1], Hannah E. Tanquary[1], Robert Zellem[1], Tiffany Hawley[2], Dante Lauretta[1], Ed Beshore[1], Bill Bottke[3], Carl Hergenrother[1], Jason P. Dworkin4, Rose Patchell[5], Sarah E. Spitz[5], Zoe Bentley[6]
Institution(s): *[1.] University of Arizona, Tucson , AZ. [2.] Rensselaer Polytechnic Institute, Troy, NY. [3.] Southwest Research Insitute, Boulder, CO. [4.] NASA Goddard Space Flight Center, Greenbelt, MD. [5.] Catalina Foothills High School, Tucson , AZ. [6.] ExogeologyRocks.com, Tucson , AZ.*
Contributing team(s): OSIRIS-REx Science Team, Members of the Target Audience

212.08 A New Method to Retrieve the Orbital Parameters of the Galilean Satellites Using Small Telescopes: A Teaching Experiment
Author(s): Agustin Sanchez-Lavega[1, 2], Iñaki Ordoñez-Etxebarria[1], Teresa del Rio-Gaztelurrutia[1, 2]
Institution(s): *[1.] Fisica Aplicada I, Universidad del Pais Vasco UPV/EHU, Bilbao, Spain. [2.] Unidad Asociada Grupo Ciencias Planetarias UPV/EHU- IAA/CSIC, Bilbao, Spain.*

212.09 Travelers In The Night
Author(s): Albert D. Grauer[1]
Institution(s): *[1.] University of Arizona, Tucson, AZ.*

212.10 Scientific Tools and Techniques: An Innovative Introduction to Planetary Science / Astronomy for 9th Grade Students
Author(s): Edward F. Albin[1]
Institution(s): *[1.] Fernbank Science Center, Atlanta, GA.*

212.11 Star Formation and Exoplanetary Systems in the National Science Olympiad Astronomy Event for High School Students
Author(s): Thaddeus D. Komacek[1], Donna Young[2, 3,] Dustin M. Schroeder[4, 5], Mark A. Van Hecke[6]
Institution(s): *[1.] Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ. [2.] American Association of Variable Star Observers, Cambridge, MA. [3.] Chandra X-Ray Center, Harvard-Smithsonian Center for Astrophysics, Cambridge, MA. [4.] Jet Propulsion Laboratory, Pasadena, CA. [5.] Science Olympiad Earth and Space Science Committee Co-Chair, Pasadena, CA. [6.] Science Olympiad Earth and Space Science Committee Co-Chair, East China, MI.*

212.12 Using the Mars Student Imaging Project (MSIP) in a University Classroom
Author(s): Heidi L. Manning[1], Luiz Manzoni[1], Thelma Berquo[1], Mark Gealy[1]
Institution(s): *[1.] Concordia College, Moorhead, MN.*

212.13 From the Green Screen to the Classroom: Training Graduate Students to Communicate Science and Mathematics Effectively through the INSPIRE Program
Author(s): Donna M. Pierce[1], Sarah P. Radencic[1], Ryan M. Walker[1], John H. Cartwright[1], Darrel W. Schmitz[1], Lori M. Bruce[1], Karen S. McNeal[2]
Institution(s): *[1.] Mississippi State Univ., Mississippi State, MS. [2.] North Carolina State University, Raleigh, NC.*

212.14 The Mixed Up Solar System: Professional Development for Secondary Science and Math Educators
Author(s): Bonnie K. Meinke[1], Bonnie Eisenhamer[1], Francis Summers[1], Dan McCallister[1], Kathy Cordes[1]
Institution(s): *[1.] STScI, Baltimore, MD.*

212.15 Undergraduate Conceptions About What it Means to Study Something Scientifically
Author(s): Megan Nieberding[1], Chris Impey[1], Sanlyn Buxner[1], James Romine[1]
Institution(s): *[1.] University of Arizona, Tucson, AZ.*

212.16 Teaching Astronomy using a Flipped Classroom Model of Instruction
Author(s): Matthew Wenger[2, 1], Chris D. Impey[2], Wendy Rivera Chavez[3]
Institution(s): *[1.] Planetary Science Institute, Tucson, AZ. [2.] University of Arizona, Tucson, AZ. [3.] University of California, Long Beach, CA.*

212.17 Using Exoplanet Models to Explore NGSS and the Nature of Science and as a Tool for Understanding the Scientific Results from NIRCam/JWST
Author(s): Larry A. Lebofsky[1], Donald W. McCarthy[1], Michelle L. Higgins[1], Nancy R. Lebofsky[2]
Institution(s): *[1.] University of Arizona, Tucson, AZ. [2.] University of Arizona, Retired, Tucson, AZ.*

212. 18 PDS and NASA Tournament Laboratory Project to Engage Citizen Scientists and to Provide New Access to Cassini Data
Author(s): Jennifer Odess[1], Mitch Gordon[2], Mark Showalter[2], Andy LaMora[1], Ambi Del Villar[1], Anne Raugh[3], Kristen Erickson[4], Carol Galica[4], Ed Grayzeck[5], Thomas Morgan[5], Bill Knopf[4]
Institution(s): [1.] Customer Relations, Appirio - Topcoder, Bethesda, MD. [2.] SETI Institute, Mountain View, CA. [3.] University of Maryland, College Park, MD. [4.] NASA Headquarters, Washington , DC. [5.] Goddard Space Flight Center, Goddard, MD.

213 Asteroids Physical Characterization Posters: NEAs

Tuesday, 3:30 pm - 6:00 pm; Star Circle Pavilion/Arizona Ballroom 6

Chair(s): Richard Binzel *(MIT)* **& Michael Busch** *(UCLA/NRAO)*

213.01 A Digital Terrain Model of the NEAR-Shoemaker Landing Site on Asteroid (433) Eros
Author(s): Daniella DellaGiustina[1], Ellyne Kinney Spano[1]
Institution(s): *[1.] Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ.*

213.02 Rapid Generation of Image Mosaics and Maps for the OSIRIS-REx Mission
Author(s): Ellyne K. Kinney-Spano[1], Daniella DellaGiustina[1], Hannah E. Tanquary[1], Bashar Rizk[1], Dathon R. Golish[1], Wenjeng Ko[1]
Institution(s): *[1.] Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ.*

213.03 Numerical Simulations of Spacecraft-Regolith Interactions on Asteroids
Author(s): Ronald Ballouz[1], Derek C. Richardson[1], Patrick Michel[2], Stephen R. Schwartz[2]
Institution(s): *[1.] Astronomy, University of Maryland College Park, College Park, MD. [2.] Lagrange Laboratory, University of Nice Sophia Antipolis, CNRS, Observatoire de la Côte d'Azur, Nice, France.*

213.04 Crowd-sourcing Near-Earth Asteroid Science with the OSIRIS-REx Target Asteroids! Program
Author(s): Carl W. Hergenrother[1], Dolores H. Hill[1], Anna Spitz[1], Maria Antonietta Barucci[2], Richard P. Binzel[3], Ed Beshore[1], William Bottke[13], John Robert Brucato[4], Beth E. Clark[5], Edward Cloutis[7], Harold C. Connolly[6, 14], Marco Delbo[8], Elisabetta Dotto[9], Simone Ieva[9, 2], Javier Licandro[10], Michael C. Nolan[11], Davide Perna[2], Scott A. Sandford[12], Driss Takir[5], Dante S. Lauretta[1]
Institution(s): *[1.] University of Arizona-LPL, Tucson, AZ. [2.] LESIA-Observatoire de Paris, Meudon, France. [3.] MIT, Cambridge, MA. [4.] Osservatorio Astrofisico di Arcetri (INAF), Arcetri , Italy. [5.] Ithaca College, Ithaca, NY. [6.] Kingsborough College, New York, NY. [7.] University of Winnipeg, Winnipeg, MB, Canada. [8.] Obs. de la Cote d'Azur, Nice, France. [9.] Osservatorio Astronomico di Roma , Rome, Italy. [10.] Instituto de Astrofisica de Canarias, Tenerife, Spain. [11.] Arecibo Obs., Arecibo, Puerto Rico. [12.] Ames Research Center, Mountain View, CA. [13.] Southwest Research Inst, Boulder, CO. [14.] Amer. Mus. Nat. Hist., New York, NY.*
Contributing team(s): Target Asteroids! participants

213.05 Optimization of Sample Site Selection Imaging for OSIRIS-REx Using Asteroid Surface Analog Images
Author(s): Hannah E. Tanquary[1], Eric Sahr[1], Namrah Habib[1], Christopher Hawley[1], Nathan Weber[1], William V. Boynton[1], Ellyne Kinney-Spano[1], Dante Lauretta[1]
Institution(s): [1.] University of Arizona, Tucson, AZ.

213.06 Meteorite Source Regions as Revealed by the Near-Earth Object Population
Author(s): Richard P. Binzel[1, 5], Francesca E. DeMeo[2], Brian J. Burt[1], David Polishook[1], Thomas H. Burbine[3], Schelte J. Bus[4], Alan Tokunaga[4], Mirel Birlan[5]
Institution(s): *[1.] MIT, Cambridge, MA. [2.] Harvard-Smithsonian Center for Astrophysics, Cambridge, MA. [3.] Mt. Holyoke College, South Hadley, MA. [4.] Univ. Hawaii, Honolulu, HI. [5.] Obs. Paris, Paris, France.*

213.07 The Taxonomic Distribution of Mission-Accessible Small Near-Earth Asteroids
Author(s): Mary L. Hinkle[1], Nicholas Moskovitz[2], David Trilling[1]
Institution(s): *[1.] Northern Arizona University, Flagstaff, AZ. [2.] Lowell Observatory, Flagstaff, AZ.*
Contributing team(s): MANOS Team

213.08 Rapid response near-infrared spectrophotometric characterization of Near Earth Objects
Author(s): Michael Mommert[1], David Trilling1[,7], Tim Axelrod[2], Nat Butler[3], Robert Jedicke[4], Nicholas Moskovitz[5], Barbara Pichardo[6], Mauricio Reyes[6]
Institution(s): *[1.] Northern Arizona University, Flagstaff, AZ. [2.] University of Arizona, Tucson, AZ. [3.] Arizona State University, Tempe, AZ. [4.] University of Hawaii, Manoa, HI. [5.] Lowell Observatory, Flagstaff, AZ. [6.] UNAM, Ensenada, Baja California, Mexico. [7.] South African Astronomical Observatory, Cape Town, Western Cape, South Africa.*

213.09 Near-Earth Asteroid Program at the Center for Solar System Studies
Author(s): Robert D. Stephens[1, 2], Brian D. Warner[1, 2], Alan W. Harris[2], Daniel R. Coley[1]
Institution(s): *[1.] Center for Solar System Studies, Rancho Cucamonga, CA. [2.] MoreData!, Rancho Cucamonga, CA.*

213.10 Was the Chelyabinsk meteoroid a fragment of Potentially Hazardous Asteroid (86039) 1999 NC43?
Author(s): Vishnu Reddy[1], Juan Sanchez[1], Rachel Klima[2], Edward A. Cloutis[3], Matthew R. Izawa[3], Lucille Le Corre[1], Paul Mann[3]
Institution(s): *[1.] Planetary Science Institute, Tucson, AZ. [2.] APL/JHU, Laurel, MD. [3.] University of Winnipeg, Winnipeg, MB, Canada.*

213.11 Synoptic Observations for Physical Characterization of Fast Rotator NEOs
Author(s): Jean-Baptiste Kikwaya Eluo[1], Carl W. Hergenrother[2]
Institution(s): *[1.] Vatican Observatory, Tucson, AZ. [2.] Lunar and Planetary Laboratory, Tucson, AZ.*

213.12 Spacewatch Taxonomic Photometry of Near-Earth Objects Detected by NEOWISE
Author(s): Jeffrey A. Larsen[1, 2], Robert S. McMillan[2], James V. Scotti[2]
Institution(s): *[1.] US Naval Academy, Annapolis, MD. [2.] LPL/U.Az., Tucson, AZ.*

213.13 Detectability of Boulders on Near-Earth Asteroids
Author(s): Kevin J. Miller[1], Patrick A. Taylor[2], Christopher Magri[3], Michael C. Nolan[2], Ellen S. Howell[2]
Institution(s): *[1.] Millersville University, Millersville, PA. [2.] Arecibo Observatory, Arecibo, Puerto Rico. [3.] University of Maine - Farmington, Farmington, ME.*

213.14 Regolith Levitation on Small Fast Rotating Asteroids
Author(s): Adriano Campo Bagatin[1], Fernando Moreno[2], Antonio Molina[3, 2]
Institution(s): *[1.] Fisica, ISTS / IUFAcyT, Universidad de Alicante, Alicante, Spain. [2.] Instituto de Astrofisica de Andalucia - CSIC, Granada, Spain. [3.] Universidad de Granada, Granada, Spain.*

213.16 Near-Infrared (2 – 4 μm) spectroscopy of Near-Earth Asteroids: Searching for OH/H2O on small planetary bodies
Author(s): Nathanael Wigton[1], Josh P. Emery[1], Andrew S. Rivkin[2], Cristina A. Thomas[3]
Institution(s): *[1.] Earth and Planetary Sciences, University of Tennessee, Knoxville, TN. [2.] JHU/APL, Laurel, MD. [3.] Goddard Space Flight Center, Greenbelt, MD.*

213.17 Real-time Characterization of Near-Earth Objects: New Spectral Capabilities at the Magdalena Ridge Observatory 2.4-meter
Author(s): William Ryan[1], Eileen V. Ryan[1], Lee K. Johnson[2]
Institution(s): *[1.] NM Tech/MRO, Socorro, NM. [2.] JPL, Pasadena, CA.*

213.18 The Need for Speed in Near Earth Asteroid Characterization
Author(s): Jose Luis Galache[1, 2], Charlotte L. Beeson[3, 2], Kim K. McLeod[4], Martin Elvis[2]
Institution(s): *[1.] IAU Minor Planet Center, Cambridge, MA. [2.] Smithsonian Astrophysical Observatory, Cambridge, MA. [3.] University of Southampton, Southampton, Hampshire, United Kingdom. [4.] Whitin Observatory, Wellesley College, Wellesley, MA.*

214 Future Missions Posters

Tuesday, 3:30 pm - 6:00 pm; Star Circle Pavilion/Arizona Ballroom 6

Chair(s): James Bell *(Arizona University)*

214.01 A Broadband IR Compact High Resolution Spectrometer (BIRCHES) for a Lunar Water Distribution (LWaDi) Cubesat Mission
Author(s): Pamela E. Clark[2, 1], Robert J. Macdowall[1], Dennis Reuter[1], Robin Mauk[1]
Institution(s): *[1.] NASA's GSFC, Greenbelt, MD. [2.] Catholic University of America, Washington DC, DC.*

214.02 Solar System Science with HST and JWST: Connecting the Past, Present, and Future
Author(s): Anthony Roman[1], Dean C. Hines[1], Maximilian J. Mutchler[1]
Institution(s): *[1.] STScI, Baltimore, MD.*

214.03 The Space Launch System and the Proving Ground: Pathways to Mars
Author(s): Kurt K. Klaus[1]
Institution(s): *[1.] The Boeing Company, Houston, TX.*

214.04 The Planetary Data System— Archiving Planetary Data for the use of the Planetary Science Community
Author(s): Thomas H. Morgan[1], Stephanie A. McLaughlin[2], Edwin J. Grayzeck[1], Faith Vilas[3], William P. Knopf[5], Daniel J. Crichton[4]
Institution(s): *[1.] NASA/GSFC, Greenbelt, MD. [2.] Telophase Corporation, Arlington, VA. [3.] Planetary Science Institute, Tucson, AZ. [4.] NASA/JPL, Pasadena, CA. [5.] NASA/HQ, Washington, DC.*

214.05 Monitoring of Comets and Extra-Solar Planets with ESA's Optical Ground Station
Author(s): Rita Schulz[1], Christian Erd[2], Aurelie Guilbert-Lepoutre[1], Ana Heras[1], Stefanie Raetz[1], Hans Smit[2], Anamarija Stankov[3]
Institution(s): *[1.] ESA Science Support Office, Noordwijk, Netherlands. [2.] ESA SRE-F, Noordwijk, Netherlands. [3.] ESA/ESAC, Madrid, Spain.*

214.06 The Pan-STARRS discovery machine
Author(s): Kenneth C. Chambers[1]
Institution(s): *[1.] Univ. of Hawaii, Honolulu, HI.*

214.07 The OSIRIS-REx Mission Sample Site Selection Process
Author(s): Edward C. Beshore[1], Dante Lauretta[1]
Institution(s): *[1.] Univ. of Arizona, Tucson, AZ.*
Contributing team(s): The OSIRIS-REx Team

214.08 First Light with the EXES Instrument on SOFIA
Author(s): Curtis N. DeWitt[1, 2], Matthew J. Richter[1], Kristin R. Kulas[2], Mark E. McKelvey[2], Michael E. Case[1], Melanie Clarke[3], William D. Vacca[3], Therese Encrenaz[4], Thomas K. Greathouse[5]
Institution(s): *[1.] UC Davis, Davis, CA. [2.] NASA Ames, Moffett Field, CA. [3.] USRA-SOFIA, Moffett Field, CA. [4.] Observatory of Paris Meudon, Paris, France. [5.] Southwest Research Institute, San Antonio, TX.*

214.09 The Planetary Archive
Author(s): Paulo F. Penteado[1], David Trilling[1], Alexander Szalay[2], Tamás Budavári[2], César Fuentes[3]
Institution(s): *[1.] Northern Arizona University, flagstaff, AZ. [2.] The Johns Hopkins University, Baltimore, MD. [3.] Universidad de Chile, Santiago, Chile.*

214.10 Results of the First Mars Organic Molecule Analyzer (MOMA) GC-MS Coupling
Author(s): Arnaud Buch[1], Veronica Pinnick[2], Cyril Szopa[3], Ryan Danell[4], Noel Grand[5], Friso Van Amerom[2], Daniel Glavin[2], Caroline Freissinet[2], Olivier Humeau[3], Patrice Coll[5], Ricardo Arevalo[2], Fabien Stalport[5], William Brinckerhoff[2], Harald Steininger[6], Fred Goesmann[6], Paul Mahaffy[2], Francois Raulin[5]
Institution(s): *[1.] LGPM, Êcole Centrale Paris, Chatenay-Malabry, France. [2.] NASA, Greenbelt, MD, France. [3.] LATMOS, Guyancourt, France. [4.] Danell Consulting, Winterville, NC. [5.] LISA, Créteil, France. [6.] MPS, gottingen, Germany.*
Contributing team(s): MOMA Team

214.11 Argus: A concept study for an Io observer mission from the 2014 NASA/JPL Planetary Science Summer School
Author(s): Patricio Becerra[1], Christina Holstein-Rathlou[2], Lindsay E. Hays[3], James T. Keane[1], Marc Neveu[4], Ko Basu[5], Byron Davis[6], Eugina Mendez-Ramos[6], Adam Nelessen[6], Valerie Fox[7], Jonathan F. Herman[8], Nathan L. Parrish[8], Andrea C. Hughes[9], Emma Marcucci[10], Aaron Scheinberg[11], Jonathan S. Wrobel[12]
Institution(s): *[1.] Planetary Sciences, University of Arizona, Tucson, AZ. [2.] Boston University, Boston, MA. [3.] NASA Headquarters, Washington, DC. [4.] Arizona State University, Tempe, AZ. [5.] Pennsylvania State University, University Park, PA. [6.] Georgia Institute of Technology, Atlanta, GA. [7.] Washington University , Saint Louis, MO. [8.] University of Colorado, Boulder, CO. [9.] Embry-Riddle Aeronautical University, Daytona Beach, FL. [10.] University of Alaska, Fairbanks, AK. [11.] Massachusetts Institute of Technology , Cambridge, MA. [12.] JW Research & Design, LLC., Boulder, CO.*
Contributing team(s): JPL Team X

214.12 Planetary Science with the Stratospheric Observatory for Infrared Astronomy
Author(s): William T. Reach[1]
Institution(s): *[1.] SOFIA, Moffett Field, CA.*
Contributing team(s): SOFIA Science Mission Operations Center

214.13 Solar System Science with LSST
Author(s): R. L. Jones[1], Zeljko Ivezic[1], Renu Malhotra[3], Andy C. Becker[1], Yan Fernandez[4], Jon Myers[3], Mike Solontoi[5], Alex H. Parker[2]
Institution(s): *[1.] Univ. of Washington, Seattle, WA. [2.] SwRI, Boulder, CO. [3.] UofA, Tucson, AZ. [4.] UCF, Orlando, FL. [5.] Lynchberg College, Lynchburg, VA.*

214.14 LSST: Comprehensive NEO detection, characterization, and orbits
Author(s): Zeljko Ivezic[1], Lynne Jones[1]
Institution(s): *[1.] Univ. of Washington, Seattle, WA.*
Contributing team(s): LSST Collaboration

214.15 Venus Atmosphere and Surface Explorer
Author(s): Larry W. Esposito[1], Jeff Hall[2], Tim Schofield[2]
Institution(s): *[1.] Univ. of Colorado, Boulder, CO. [2.] JPL, Pasadena, CA.*
Contributing team(s): VASE Team

214.16 A Geophysical Laboratory for Rubble Pile Asteroids: The BASiX Mission
Author(s): Daniel J. Scheeres[1], Steven Chesley[2], Robert C. Anderson[2]
Institution(s): *[1.] University of Colorado, Boulder, CO. [2.] JPL/Caltech, Pasadena, CA.*
Contributing team(s): The BASiX Science Team

214.17 Observing Solar System Targets with the James Webb Space Telescope
Author(s): James Norwood[1], Heidi Hammel[2], Stefanie Milam[3], John Stansberry[4], Jonathan Lunine[5], Nancy Chanover[1], Dean Hines[4], George Sonneborn[3], Matthew Tiscareno[5], Michael Brown[6], Pierre Ferruit[7]
Institution(s): *[1.] New Mexico State University, Las Cruces, NM. [2.] Association of Universities for Research in Astronomy, Washington, DC. [3.] Goddard Space Flight Center, Greenbelt, MD. [4.] Space Telescope Science Institute, Baltimore, MD. [5.] Cornell University, Ithaca, NY. [6.] California Institute of Technology, Pasadena, CA. [7.] ESA / ESTEC, Noordwijk, Netherlands.*

214.18 Kuiper: A Discovery-class Observatory for Giant Planets, Satellites, and Small Bodies
Author(s): James F. Bell[1], Nicholas M. Schneider[2], Michael E. Brown[3], John T. Clarke[4], Benjamin T. Greenhagen[5], Amanda R. Hendrix[6], Michael H. Wong[7]
Institution(s): *[1.] Arizona State Univ., Tempe, AZ. [2.] Univ. of Colorado, Boulder, CO. [3.] Caltech, Pasadena, CA. [4.] Boston Univ., Boston, MA. [5.] JPL, Pasadena, CA. [6.] PSI, Tucson, AZ. [7.] U.C. Berkeley, Berkeley, CA.*
Contributing team(s): The Kuiper Team

214.19 The NASA Infrared Telescope Facility (IRTF): Future Instrumentation and Upgrades
Author(s): Alan T. Tokunaga[1], S. J. Bus1, Michael S. Connelley[1], John T. Rayner[1]
Institution(s): *[1.] Univ. of Hawaii, Honolulu, HI.*

214.20 Response of Microchannel Plate (MCP) Detectors to MeV Electrons: Beamline tests in support of Juno, JUICE, and Europa Mission UVS instrument investigations
Author(s): Kurt D. Retherford[1], Michael W. Davis[1], Thomas K. Greathouse[1], G. Randall Gladstone[1], Andrew J. Steffl[2], Denis Grodent[3], Oswald H.W. Siegmund[4]
Institution(s): *[1.] Southwest Research Inst., San Antonio, TX. [2.] Southwest Research Institute, Boulder, CO. [3.] Université de Liège, Liège, Belgium. [4.] University of California, Berkeley, Berkeley, CA.*

214.21 Focus Groups for Solar System Investigations with the JWST
Author(s): Dean C. Hines[1], Stefanie N. Milam[2], John Stansberry[1], Heidi B. Hammel[3], George Sonneborn[2], Jonathan Lunine[4], Andrew Rivkin[5], Charles Woodward[6], Jim Norwood[7], Geronimo Villanueva[2, 8], Cristina Thomas[2, 9], Pablo Santos-Sanz[10], Matthew Tiscareno[4], Laszlo Kestay[11], Conor Nixon[2], Alex Parker[12]
Institution(s): *[1.] Space Telescope Science Institute, Baltimore, MD. [2.] NASA GSFC, Greenbelt, MD. [3.] AURA, Washington, DC. [4.] Cornell, Ithaca, NY. [5.] JHU/APL, Laurel, MD. [6.] U. Minnesota, Minneapolis, MN. [7.] New Mexico State, Las Cruces, NM. [8.] Catholic Univ.of America, Washington, DC. [9.] Oak Ridge Associated Univ, Oak Ridge, TN. [10.] IAA-CSIC, Granada, Province of Granada, Spain. [11.] USGS, Flagstaff, AZ. [12.] UC Berkeley, Berkeley, CA.*

214.22 The Development and Field Testing of the Portable Acousto-optic Spectrometer for Astrobiology
Author(s): Nancy J. Chanover[1,] Kyle Uckert[1], David Voelz[1], Penelope Boston[2]
Institution(s): *[1.] New Mexico State Univ., Las Cruces, NM. [2.] New Mexico Institute of Mining and Technology, Socorro, NM.*

214.23 PADME (Phobos And Deimos & Mars Environment): A Proposed NASA Discovery Mission
Author(s): Pascal Lee[1, 2]
Institution(s): *[1.] NASA ARC, Mountain View, CA. [2.] SETI Institute, Mountain View, CA.*
Contributing team(s): PADME Team

214.24 Orbiters for Callisto and Titan - the Affordable Options
Author(s): Daniel Wenkert[1], John O. Elliott[1]
Institution(s): *[1.] Jet Propulsion Laboratory, Pasadena, CA.*

214.25 Planetary Radar with the Green Bank Telescope
Author(s): Alyson Ford[1], John M. Ford[1], Galen Watts[1]
Institution(s): *[1.] NRAO, Green Bank, WV.*

214.26 Satellite Communications with NRAO Green Bank Antennas
Author(s): John M. Ford[1], H. Alyson Ford[1], Galen Watts[1]
Institution(s): *[1.] National Radio Astronomy Observatory, Green Bank, WV.*

214.27 The Southern Argentine Agile Meteor Radar (SAAMER)
Author(s): Diego Janches[1]
Institution(s): *[1.] Space Weather Laboratory, NASA/GSFC, Greenbelt, MD.*
Contributing team(s): J.L. Hormaechea, S. Pifko, W. Hocking, A. Tarano, W. Hocking, D.C. Fritts, C. Brunini, S. Close, R. Michell, M. Samara

214.28 Status of Radiative Transfer Model (RTM) development for the Northrop Grumman Venus Atmospheric Maneuverable Platform (VAMP) Technology Development Program
Author(s): Eric Wong[1]
Institution(s): [1.] *Northrop Grumman Inc., Redondo Beach, CA.*
Contributing team(s): Greg Lee, Ron Polidan

IOPW - Planetary Atmospheres Node Workshop

Thursday, 3:30 pm - 5:00 pm; Arizona Ballroom 1-4

The International Outer Planets Watch (IOPW) organizes a a Planetary Atmospheres Workshop focused on observations of the Giant Planets Jupiter, Saturn, Uranus and Neptune. Relevant topics for this year workshop are the upcoming support for JUNO on Jupiter, networking with amateur observations of the giant planets and advancements in observational capabilities. Discussion on relevant works related with atmospheric models are also welcomed. The workshop will be an informal public meeting. People interested in presenting research works or topics of discussion should contact the workshop organizer Ricardo Hueso by e-mail: ricardo.hueso@ehu.es
Organizer(s): Ricardo Hueso *(Universidad del País Vasco)*

Planetary Sciences Institute Open House

Tuesday; 7:00 pm - 10:00 pm, Planetary Sciences Institute

The Planetary Science Institute will be hosting an open house and food-truck round-up for DPS attendees and their families. PSI will provide the beverages and there will be an array of cuisines available.

300 Mars Atmosphere 1

Wednesday, 8:30 am - 10:00 am; Tucson Ballroom E/F

Chair(s): Nicholas Heavens *(Cornell University)* **&**
Melinda Kahre *(NASA Ames Research Center)*

300.01 Investigating the Effects of Water Ice Cloud Radiative Forcing on the Predicted Patterns and Strength of Dust Lifting on Mars
Author(s): Melinda A. Kahre[1], Jeffery L. Hollingsworth[1], Robert M. Haberle[1]
Institution(s): *[1.] NASA Ames Research Center, Moffett Field, CA.*

300.02 Climate Change on Mars: Cloud Greenhouse Effects in the Recent Past
Author(s): Robert M. Haberle[1], Melinda A. Kahre[1], Jeffery L. Hollingsorth[1]
Institution(s): *[1.] NASA Ames Research Center, Moffett Field, CA.*

300.03 Large-Scale Weather Disturbances in Mars' Southern Extratropics: Sway of the Great Impact Basins
Author(s): Jeffery L. Hollingsworth[1], Melinda A. Kahre[1]
Institution(s): *[1.] NASA Ames Research Center, Moffett Field, CA.*

300.04 Mass Balance of Mars' South Polar Residual Cap
Author(s): Peter C. Thomas[1], Wendy Calvin[2], Robert Haberle[3], Philip James[4], Steven Lee[5]
Institution(s): *[1.] Cornell Univ., Ithaca, NY. [2.] University of Nevada, Reno, NV. [3.] Ames Research Center, Moffet Field, CA. [4.] Space Science Institute, Boulder, CO. [5.] Denver Museum Nature and Science, Denver, CO.*

300.05 A Multi-Year Dust Devil Vortex Survey Using an Automated Search of Pressure Time-Series
Author(s): Brian K. Jackson[1], Ralph Lorenz[2]
Institution(s): *1. Boise State, Physics, Boise, ID. 2. JHU/APL, Laurel, MD.*

300.06 Investigating Dust-less Devils at Gale Crater
Author(s): Kathryn Steakley[1], James R. Murphy[1]
Institution(s): *[1.] New Mexico State University, Las Cruces, NM.*

300.07 Martian Dust Aerosol Size and Shape as Constrained by Phoenix Lander Polarimetry
Author(s): Mark T. Lemmon[1], Emily L. Mason[1]
Institution(s): *[1.] Texas AandM University, College Station, TX.*

300.08 A Mars Dust Model with Interactive Dynamics, Radiation, and Microphysics
Author(s): Victoria Hartwick[1], O. Brian Toon[1]
Institution(s): *[1.] University of Colorado at Boulder, Boulder, CO.*

300.09 Detached Dust Layers in Regional and Global Dust Events on Mars
Author(s): Nicholas Heavens[1]
Institution(s): *[1.] Hampton University, Hampton, VA.*

WEDNESDAY, 12 NOVEMBER 2014

301 Exoplanet Theories and Predictions

Wednesday, 8:30 am - 10:00 am; Arizona Ballroom 7

Chair(s): Vlada Stamenkovic *(MIT)*

301.01 The Role of Hydrogen in Determining the Stability of CO2 Atmospheres of Terrestrial Exoplanets Around M Dwarfs
Author(s): Peter Gao[1], Renyu Hu[1], Tyler D. Robinson[2], Yuk L. Yung[1]
Institution(s): *[1.] California Institute of Technology, Pasadena, CA. [2.] NASA Ames Research Center, Mountain View, CA.*

301.02 Jupiter-like planets as dynamical barriers to inward-migrating super-Earths: a new understanding of the origin of Uranus and Neptune and predictions for extrasolar planetary systems
Author(s): Alessandro Morbidelli[1, 2], Andre' Izidoro Da Costa[2], Sean Raymond[1]
Institution(s): *[1.] CNRS, Nice, Cedex 4, France, France. [2.] Observatoire de la Cote d'Azur, Nice, France.*

301.03D Hot Jupiters from Coplanar High-eccentricity Migration
Author(s): Cristobal Petrovich[1]
Institution(s): *[1.] Astrophysical Sciences, Princeton University, Princeton, NJ.*

301.04 Influence of Tidal Heating on the Internal and Orbital Evolution of Rocky Exoplanets
Author(s): Peter E. Driscoll[1], Rory Barnes[1]
Institution(s): *[1.] University of Washington, Seattle, WA.*

301.05 Obliquity Evolution of an Early Venus
Author(s): Billy L. Quarles[1], Jason Barnes[2], Jack J. Lissauer[1], John Chambers[3]
Institution(s): *[1.] NASA Ames Research Center, Moffett Field, CA. [2.] University of Idaho, Moscow, ID. [3.] Carnegie Inst. of Washington, Washington, DC.*

301.06 Optimal Planet Properties For Plate Tectonics Through Time And Space
Author(s): Vlada Stamenkovic[1], Sara Seager[1]
Institution(s): *[1.] Earth, Atmopsheric and Planetary Sciences, MIT Massachusetts Institute of Technology, Cambridge, MA.*

301.07 Groupies and Loners: The Population of Multi-planet Systems
Author(s): Christa L. Van Laerhoven[1], Richard Greenberg[2]
Institution(s): *[1.] Canadian Institute for Theoretical Astronphysics, Toronto, ON, Canada. [2.] University of Arizona, Tucson, AZ.*

301.08 Kepler Circumbinary Planet KIC 9632895b: Implications of Planet's Orbital Inclination for its Origin and Formation
Author(s): Nader Haghighipour[1], Jerome Orosz[2], William welsh[2]
Institution(s): *[1.] Univ. of Hawaii, Honolulu, HI. [2.] San Diego State University, San Diego, CA.*

301.09 Small, numerous and close-in: How occurrence rates of planets around lower-mass stars can constrain planet formation mechanisms.
Author(s): Gijs D. Mulders[1], Ilaria Pascucci[1], Daniel Apai[1]
Institution(s): *[1.] University of Arizona, Tucson, AZ.*

302 Venus

Wednesday, 8:30 am - 10:00 am; Arizona Ballroom 11/ 12

Chair(s): Constantine Tsang *(Southwest Research Institute)* **&**
Hakan Svedhem *(ESA/ESTEC)*

302.01 HST/STIS Observations of Venus' Dayside Atmosphere, from morning to noon
Author(s): Kandis-Lea Jessup[1, 2], Emmanuel Marcq[3], Frank Mills[2], Yuk Yung[4], Tony Roman[5], Jean Loup Berteaux[3], Arnaud Mahieux[8], Valerie Wilquet[8], Ann Carine Vandaele[8], Colin Wilson[6], Sanjay Limaye[7], Wojtek Markiewicz[9]
Institution(s): *[1.] South West Research Inst., Boulder, CO. [2.] Australian National University, Canberra, ACT, Australia. [3.] LATMOS, Versailles, France. [4.] Caltech, Pasadena, CA. [5.] Space Telescope Institue, Baltimore, MD. [6.] Oxford University, Oxford, United Kingdom. [7.] University of Wisconsin, Madison, WI. [8.] Institut d'Aeronomie Spatiale de Belgique, Brussels, Belgium. [9.] Max Planck Institute, Munich, Germany.*

302.02 Photochemical Control of the Distribution of Venusian Water and Comparison to Venus Express SOIR Observations
Author(s): Chris Parkinson[1], Yuk Yung[2], Larry Esposito[3], Peter Gao[2], Steve Bougher[1]
Institution(s): *[1.] Univ. of Michigan, Ann Arbor, MI. [2.] California Institute of Technology, Pasadena, CA. [3.] University of Colorado, Boulder, CO.*

302.03 Laboratory Measurements of the Millimeter-Wavelength Sulfur Dioxide Absorption Spectrum under Simulated Venus Conditions
Author(s): Amadeo Bellotti[1], Paul G. Steffes[1]
Institution(s): *[1.] Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA.*

302.04 Venus upper clouds and the UV-absorber from MESSENGER/MASCS observations
Author(s): Santiago Perez-Hoyos[1, 2], Agustin Sanchez-Lavega[1, 2], Antonio Garcia Munoz[3], Patrick Irwin[4], Javier Peralta[5], Greg Holsclaw[6], William McClintock[6]
Institution(s): *[1.] Fisica Aplicada I, Universidad del Pais Vasco UPV/EHU, Bilbao, Spain. [2.] Unidad Asociada GCP-IAA/CSIC, Bilbao/Granada, Spain. [3.] ESA/RSSD, ESTEC, Noordwijk, Netherlands. [4.] University of Oxford, Oxford, United Kingdom. [5.] Instituto Astrofisica Andalucia, Granada, Spain. [6.] Laboratory for Atmospheric and Space Physics, Boulder, CO.*

302.05 Venus's Mysterious Oxygen Green Line: An Auroral Process?
Author(s): Candace L. Gray[1], Nancy Chanover[1], Tom Slanger[2], Karan Molaverdikhani[3], Bernd Hausler[4], Silvia Tellmann[5], Kerstin Peter[5], Olivier Witasse[6], Pierre-Louise Blelly[7], Antonio Garcia-Munoz[6]
Institution(s): *[1.] New Mexico State University, Las Cruces, NM. [2.] SRI International, Menlo Park, CA. [3.] The laboratory of Atmospheric and Space Physics, Boulder, CO. [4.] Institut fur Raumfahrttechnik, Muchen, Germany. [5.] Rheinisches Institut fur Umweltforschung, Cologne, Germany. [6.] European Space Research and Technology Centre (ESTEC), Noordwijk, Netherlands. [7.] Institut de Recherche en Astrophysique et Planétologie (IRAP), Toulouse, France.*

302.06 Venus' thermospheric temperature field using a refraction model at terminator : comparison with 2012 transit observations using SDO/HMI, VEx/SPICAV/SOIR and NSO/DST/FIRS

Author(s): Thomas Widemann[1], Sarah Jaeggli[2], Kevin Reardon[3], Paolo Tanga[4], Christophe Père[4], Jay M. Pasachoff[5], Ann Carine Vandaele[6], Valerie Wilquet[6], Arnaud Mahieux[6], Colin Wilson[7]

Institution(s): *[1.] LESIA, Paris Observatory, Meudon, France. [2.] Montana State University, Bozeman, MT. [3.] NSO/Sacramento Peak, Tucson, AZ. [4.] Obs. Côte d'Azur, Nice, France. [5.] Williams College, Williamstown, MA. [6.] BIRA/IASB, Brussels, Belgium. [7.] Oxford University, Oxford, United Kingdom.*

Contributing team(s): The EuroVenus consortium

302.07 Thermal structure at the Venus terminator: Comparison of SOIR/Vex profiles with a radiative transfer model

Author(s): Arnaud Mahieux[1, 2], Justin T. Erwin[3], Sarah Chamberlain[1], Bernd Funke[4], Manuel López Puertas[4], Miguel López Valverde[4], Séverine Robert[1], Ann Carine Vandaele[1], Valérie Wilquet[1], Roger V. Yelle[3], Jean-Loup Bertaux[5, 6]

Institution(s): *[1.] Planetary Sciences, Belgian Institute for Space Aeronomy, Uccle, Belgium. [2.] Fonds National de la Recherche Scientifique, Brussels, Belgium. [3.] Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ. [4.] Instituto de Astrofísica de Andalucía, Granada, Spain. [5.] LATMOS - UVSQ/CNRS/IPSL, Guyancourt, France. [6.] Institut Pierre Simon Laplace, Université de Versailles-Saint-Quentin, Guyancourt, France.*

302.08 Three-dimensional thermal structure of the South Polar Vortex of Venus

Author(s): Ricardo Hueso[1, 3], Itziar Garate-Lopez[1], Antonio Garcia-Muñoz[2], Agustín Sánchez-Lavega[1, 3]

Institution(s): *[1.] Física Aplicada I, Universidad del País Vasco, Bilbao, Spain. [2.] ESA/RSSD, ESTEC, Noordwijk, Netherlands. [3.] Unidad Asociada Grupo Ciencias Planetarias UPV/EHU-IAA (CSIC), Bilbao, Spain.*

302.09 Results of the Venus Express Aerobraking Campaign

Author(s): Hakan Svedhem[1], Ingo Müller-Wodarg[2]

Institution(s): *[1.] ESA/ESTEC, Noordwijk, Netherlands. [2.] Imperial College, London, United Kingdom.*

303 Mars Atmosphere 2

Wednesday, 10:30 am - 12:00 pm; Tucson Ballroom E/F

Chair(s): Shannon Curry *(University of Michigan)* **& Renyu Hu** *(MIT)*

303.01 The Expected and the Unexpected: Seasonal Variation of Major and Minor Species in the Mars Atmosphere as Measured In Situ by Curiosity
Author(s): Melissa G. Trainer[1], Heather B. Franz[1, 2], Paul R. Mahaffy[1], Michael H. Wong[3, 4], Sushil K. Atreya[3], Christopher P. McKay[5], Pamela G. Conrad[1], Charles A. Malespin[1, 6], Anna E. Brunner[7], Robert O. Pepin[8], Richard H. Becker[8], Tobias C. Owen[9], Heidi L. Manning[10], Timothy H. McConnochie[2], Javier Martin-Torres[11], María-Paz Zorzano[12]
Institution(s): *[1.] NASA Goddard Space Flight Center, Greenbelt, MD. [2.] University of Maryland, College Park, MD. [3.] University of Michigan, Ann Arbor, MI. [4.] University of California, Berkeley, CA. [5.] NASA Ames Research Center, Moffett Field, CA. [6.] Universities Space Research Association, Houston, TX. [7.] Arizona State University, Tempe, AZ. [8.] University of Minnesota, Minneapolis, MN. [9.] University of Hawaii, Honolulu, HI. [10.] Concordia College, Moorhead, MN. [11.] Instituto Andaluz de Ciencias de la Tierra, Granada, Spain. [12.] Centro de Astrobiologia, Madrid, Spain.*
Contributing team(s): MSL Team

303.02 Carbon Reservoir History of Mars Constrained by Atmospheric Isotope Signatures
Author(s): Renyu Hu[1, 2], David M. Kass[1], Bethany L. Ehlmann[2, 1], Yuk Yung[2]
Institution(s): *[1.] Jet Propulsion Laboratory, Pasadena, CA. [2.] California Institute of Technology, Pasadena, CA.*

303.03 Daily Variation of Isotope Ratios in Mars Atmospheric Carbon Dioxide
Author(s): Timothy A. Livengood[1], Theodor Kostiuk[2], John R. Kolasinski[2], Tilak Hewagama[6, 2], Wade G. Henning[1], Manuela Sornig[3], Tobias Stangier[4], Pia Krause[4], Guido Sonnabend[5], Paul R. Mahaffy[2]
Institution(s): *[1.] CRESST/UMD/GSFC, Greenbelt, MD. [2.] NASA Goddard Space Flight Center, Greenbelt, MD. [3.] Rhenish Institute for Environmental Research, Cologne, Germany. [4.] University of Cologne, Cologne, Germany. [5.] Radiometer Physics GmbH, Meckenheim, Germany. [6.] University of Maryland, College Park, MD.*

303.04 Revealing the water cycle on Mars via D/H isotopic measurements
Author(s): Geronimo L. Villanueva[1, 2], Michael J. Mumma[1], Robert E. Novak[3], Hans-Ullrich Käufl[4], Paul Hartogh[5], Therese Encrenaz[6], Alan Tokunaga[7], Alain Khayat[7]
Institution(s): *[1.] NASA's GSFC, Greenbelt, MD. [2.] Catholic University of America, Washington, DC. [3.] Iona College, New Rochelle, NY. [4.] European Southern Observatory, Munich, Germany. [5.] Max-Planck-Institute for Solar System Research, Göttingen, Germany. [6.] Observatoire de Paris-Meudon, Paris, France. [7.] University of Hawaii, Manoa, HI.*

303.05 An extremely high altitude plume seen at Mars morning terminator
Author(s): Agustin Sanchez-Lavega[1, 10], Antonio Garcia-Muñoz[2], Enrique Garcia-Melendo[1, 3], Santiago Perez-Hoyos[1, 10], Josep M. Gomez-Forrellad[3], Christophe Pellier[8], Marc Delcroix[8], Miguel Angel Lopez-Valverde[7, 10], Francisco Gonzalez-Galindo[7, 10], Wayne Jaeschke[5], Donald C. Parker[4], James H. Phillips[6], Damian Peach[9]
Institution(s): *[1.] Fisica Aplicada I, Universidad del Pais Vasco UPV/EHU, Bilbao, Spain. [2.] European Space Agency/ESTEC, Noordwijk, Netherlands. [3.] Fundació Observatori Esteve Duran, Barcelona, Spain. [4.] Association of Lunar and Planetary Observers, Coral Gables, FL. [5.] Association of Lunar and Planetary Observers, West Chester, PA. [6.] Association of Lunar and Planetary Observers, Charleston, SC. [7.] Instituto de Astrofísica de Andalucía, Granada, Spain. [8.] Société Astronomique de France, Paris, France. [9.] British Astronomical Association, London, United Kingdom. [10.] Unidad Asociada Grupo Ciencias Planetarias UPV/EHU- IAA/CSIC, Bilbao, Spain.*

303.06 Perturbation of the Mars atmosphere by Siding Spring
Author(s): Roger Yelle[1], Francisco Gonzalez-Galindo[2], Jean-Yves Chaufray[3, 4], Francois Forget[3], Arnaud Mahieux[5]
Institution(s): *[1.] Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ. [2.] Instituto de Astrofisica de Andalucia, CSIC, Granada, Spain. [3.] Laboratoire de Meteorologie Dynamique, Universite Paris VI, Paris, France. [4.] Laboratoire Atmosphere, Milieux et Observations Spatiales, Universite Paris VI, Paris, France. [5.] Belgian Institute for Space Aeronomy, Brussels, Belgium.*

303.08 Analysis and Modelling of HST Observations of the Martian Exosphere
Author(s): Dolon Bhattacharyya[1], John T. Clarke[1], Jean-Loup Bertaux[2], Jean-Yves Chaufray[2]
Institution(s): *[1.] Boston University, Boston, MA. [2.] LATMOS, Paris, France.*

303.09D Simulated orbits of heavy planetary ions at Mars for different IMF configurations
Author(s): Shannon Curry[1], Janet Luhmann[1], Roberto Livi[1], Takuya Hara[1], Chuanfei Dong[2], Yingjuan Ma[3], James McFadden[1], Stephen Bougher[2]
Institution(s): *[1.] University of California, Berkeley, CA. [2.] University of Michigan, Ann Arbor,, MI. [3.] University of California, Los Angeles, CA.*

304 Assorted Small Bodies

Wednesday, 10:30 am - 12:00 pm; Arizona Ballroom 7

Chair(s): Brett Gladman *(Univ. of British Columbia)* **& Pascal Lee** *(Mars Institute)*

304.01 Wavelength Dependence of the Opposition Effect for Asteroids Steins and Lutetia: Analysis of the Rosetta OSIRIS Data
Author(s): Ludmilla Kolokolova[1], Fiorangela La Forgia[2], Monica Lazzarin[2], Sara Magrin[2]
Institution(s): *[1.] Univ. of Maryland, College Park, MD. [2.] University of Padova, Padova, Italy.*

304.02 Earth's Nearest Neighbors: Dynamical integrations of NEO-Earth approaches in support of MANOS
Author(s): Thomas Endicott[1], Nicholas Moskovitz[2], Richard Binzel[3], David Polishook[3], Brian Burt[3]
Institution(s): *[1.] University of Massachusetts Boston, Boston, MA. [2.] Lowell Observatory, Flagstaff, AZ. [3.] Massachusetts Institute of Technology, Cambridge, MA.*
Contributing team(s): MANOS

304.03 Where Did the Ureilite Parent Body Accrete? Constraints from Chemical and Isotopic Compositions
Author(s): Cyrena Goodrich[1], David P. O'Brien[1]
Institution(s): *[1.] Planetary Science Institute, Tucson, AZ.*

304.04 Physical Characteristics of Faint Meteors by Light Curve and High-resolution Observations
Author(s): Dilini Subasinghe[1], Margaret D. Campbell-Brown[1], Edward Stokan[1]
Institution(s): *[1.] University of Western Ontario, London, ON, Canada.*

304.05 Measuring Fracture Properties of Meteorites: 3D Scans and Disruption Experiments.
Author(s): Desireé Cotto-Figueroa[1], Erik Asphaug[1], Melissa A. Morris[2, 3], Laurence Garvie[2]
Institution(s): *[1.] School of Earth and Space Exploration, Arizona State University, Tempe, AZ. [2.] Center for Meteorite Studies, Arizona State University, Tempe, AZ. [3.] State University of New York at Cortland, Cortland, NY.*

304.06 Meteoroid Impacts: A Competitor for Yarkovsky and YORP
Author(s): Paul Wiegert[1]
Institution(s): *[1.] Univ. of Western Ontario, London, ON, Canada.*

304.07 Phobos: Low Velocity Impacts
Author(s): Heather Smith[1], Pascal Lee[1, 2], Douglas Hamilton[3]
Institution(s): *[1.] NASA ARC, Moffett Field, CA. [2.] SETI Institute, Mountain View, CA. [3.] University of Maryland, Baltimore, MD.*

304.08 PANDORA - Unlocking the mysteries of the Moons of Mars
Author(s): Thomas H. Prettyman[1], Serina Diniega[2], Carol A. Raymond[2]
Institution(s): *[1.] Planetary Science Institute, Tucson, AZ. [2.] NASA Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA.*
Contributing team(s): PANDORA Science Team

304.09 Periods, Poles, and Shapes of Irregular Satellites of Saturn from Lightcurves
Author(s): Tilmann Denk[1], Stefano Mottola[2]
Institution(s): *[1.] Freie Universität, Berlin, Germany. [2.] DLR, Berlin, Germany.*

305 Laboratory Astrophysics

Wednesday, 10:30 am - 11:10 am; Arizona Ballroom 11/ 12

Chair(s): Murthy Gudipati *(Jet Propulsion Laboratory)* **&**
Elizabeth Jensen *(Planetary Science Institute)*

305.01 The atomic branching ratios in the photodissociation N2, CO, and CO2 in the deep VUV from 11.50-15.15 eV is used to discuss the chemistry in comets, planetary atmospheres, protoplanetary disk, and dense molecular clouds.
Author(s): William M. Jackson[1], Yu Song[2], Zhou Lu[3], Hong Gao[4], Yih C. Chang[5], Jingang Zhou[6], Xiayou Shi[7], Yang Pan[8], Lei Yang[9], Qing Z. Yin[10], Cheuk Y. Ng[11]
Institution(s): *[1.] University of California, Davis, CA. [2.] University of California, Davis, CA. [3.] University of California, Davis, CA. [4.] Stanford University, Palo Alto, CA. [5.] University of California, Davis, CA. [6.] University of California, Davis, CO. [7.] University of California, San Francisco, CA. [8.] University of Science and Technology, Hefei, Anhui, China. [9.] University of California, Davis, CA. [10.] University of California, Davis, CA. [11.] University of California, Davis, CA.*

305.02 VUV Spectroscopy of UV-Processed Planetary Ice Analogs
Author(s): Murthy Gudipati[1, 2]
Institution(s): *[1.] Jet Propulsion Laboratory, Pasadena, CA. [2.] IPST, University of Maryland, College Park, MD.*

305.03 Micrometeorite Impact Effects on Comets and Asteroids: Temperature versus Spectral Variation
Author(s): Elizabeth Jensen[1], Susan M. Lederer[2], Michael Fane[3], 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]
Institution(s): *[1.] Planetary Science Institute, Houston, TX. [2.] NASA Johnson Space Center, Houston, TX. [3.] California State Univ. San Bernardino, San Bernardino, CA. [4.] NASA Ames Research Center, Mountain View, CA. [5.] Univ. of Tennessee, Knoxville, TN.*

305.04 Identification of the UIR bands and their Relationship to Solar System Origins
Author(s): Fred M. Johnson[1], Neil Spingarn[2]
Institution(s): *[1.] California State Univ., Fullerton, CA. [2.] S&N Labs, Santa Ana, CA.*

306 Moon/Mercury/Mars Exospheres

Wednesday, 11:10 am - 12:00 pm; Arizona Ballroom 11/ 12

Chair(s): Elizabeth Jensen *(Planetary Science Institute)* **&**
Diane Wooden *(NASA Ames Research Center)*

306.01D Impacts of the Martian crustal magnetic fields on the thermosphere, ionosphere, and hot oxygen corona
Author(s): Yuni Lee[1], Micahel R. Combi[1], Valeriy Tenishev[1], Stephen W. Bougher[1], David Pawlowski[2], Nathaniel Franklin[2]
Institution(s): *[1.] University of Michigen, Ann Arbor, MI. [2.] Eastern Michigan University, Ypsilanti, MI.*

306.02 LADEE UVS Observations of Atoms and Dust in the Lunar Tail
Author(s): Diane H. Wooden[1], Anthony Colaprete[1], Amanda M. Cook[2], Mark H. Shirley[1], Kara E. Vargo[2], Richard C. Elphic[1], Timothy J. Stubbs[3], David A. Glenar[4]
Institution(s): *[1.] NASA Ames Research Center, Moffett Field, CA. [2.] Millennium Engineering, Moffett Field, CA. [3.] NASA Goddard Space Flight Center, Greenbelt, MD. [4.] University of Maryland Baltimore Co., Baltimore, MD.*

306.03 Distribution of H2 in the Lunar Exosphere from LAMP Observations
Author(s): Dana Hurley[1], Kurt Retherford[2], Jason Cook[3], Cesare Grava[2], Thomas Greathouse[2], Randy Gladstone[2], Alan Stern[3]
Institution(s): *[1.] JHU/APL, Laurel, MD. [2.] Southwest Research Institute, San Antonio, TX. [3.] Southwest Research Institute, Boulder, CO.*

306.04 Source and Distribution of Calcium in Mercury's Exosphere
Author(s): Rosemary M. Killen[1], Joseph M. Hahn[2]
Institution(s): *[1.] NASA Goddard Space Flight Center, Greenbelt, MD. [2.] Space Science Institute, Austin, TX.*

306.05 Simultaneous ground-based and space observations of Mercury's Sodium Exosphere.
Author(s): Nelly Mouawad[1], Fatima Kahil[2, 1]
Institution(s): *[1.] Lebanese American University, Beirut, Lebanon. [2.] Notre Dame University, Louaizeh, Lebanon.*
Contributing team(s): MASCS/MESSENGER Team

DPS Advocacy Activities: Update and Context

Wednesday, 12:00 pm - 1:00 pm; Arizona Ballroom 1-4

The DPS Federal Relations Subcommittee will host a meeting open to all attendees. Pre-registration is required for a complimentary lunch on the part of the DPS.
Organizer(s):
Makenzie Lystrup *(Ball Aerospace)*

WEDNESDAY, 12 NOVEMBER 2014

DPS Business Meeting

Wednesday, 1:00 pm - 2:30 pm; Arizona Ballroom 1-4

The annual DPS business meeting.
Chair(s): Heidi Hammel *(AURA)*

DPS Reception

Wednesday, 3:30 pm - 6:00 pm; Arizona-Sonora Desert Museum

The 2014 DPS banquet will be held on Wednesday Nov. 12 at the Arizona Sonora Desert Museum. There will be separate reception and dinner segments, and the reception may be purchased separately without dinner. During the first 1.5 hr, the museum will be open and fully available to attendees. After the museum closes, there will be a social hour with hors d'oeuvres and a hosted bar. The dinner segment will consist of an animal show and a buffet. Wine will be provided and there will be a cash bar. We have striven to provide vegetarian and non-vegetarian options of equivalent quality, and all main courses and sides at the dinner are gluten-free. The schedule is as follows:
3:30 pm - Buses arrive at the Museum
5:00 pm - Museum closes - Hosted bar and hors d'oeuvres begin
6:00 pm - Buses leave for Reception Only guests

DPS Banquet

Wednesday, 6:00 pm - 9:30 pm; Arizona-Sonora Desert Museum

The 2014 DPS banquet will be held on Wednesday Nov. 12 at the Arizona Sonora Desert Museum. There will be separate reception and dinner segments, and the reception may be purchased separately without dinner. During the first 1.5 hr, the museum will be open and fully available to attendees. After the museum closes, there will be a social hour with hors d'oeuvres and a hosted bar. The dinner segment will consist of an animal show and a buffet. Wine will be provided and there will be a cash bar. We have striven to provide vegetarian and non-vegetarian options of equivalent quality, and all main courses and sides at the dinner are gluten-free. The schedule is as follows:
6:00 pm - Banquet begins
9:30 pm - Buses depart museum

400 Asteroids: Dynamics and Collisions

Thursday, 8:30 am - 10:00 am; Tucson Ballroom E/F

Chair(s): David O'Brien *(Planetary Science Institute)* **&**
Kevin Walsh *(Southwest Research Institute)*

400.01 The Dynamical Evolution of the Inner Solar System in the Jumping-Jupiter Model
Author(s): Fernando V. Roig[1], David Nesvorny[2]
Institution(s): *[1.] Observatorio Nacional, Rio de Janeiro, RJ, Brazil, Brazil. [2.] Southwest Research Institute, Boulder, CO.*

400.02 Origin of the Main-Belt Comets: Formed In-Situ or Interlopers from the Outer Solar System?
Author(s): Henry H. Hsieh[1], Nader Haghighipour[2]
Institution(s): *[1.] Academia Sinica IAA, Taipei, Taiwan. [2.] University of Hawaii, Honolulu, HI.*

400.03 The Origin of the Long-Lived Asteroids in the 2:1 Mean-Motion Resonance with Jupiter
Author(s): Ondrej Chrenko[1], Miroslav Broz[1], David Nesvorny[2]
Institution(s): *[1.] Astronomical Institute, Faculty of Mathematics and Physics, Charles University in Prague, Prague, Czech Republic. [2.] Southwest Research Institute Boulder, Boulder, CO.*

400.04 Possible Evidence for Two Subsequent Collisions on a Differentiated Parent Body, (135) Hertha
Author(s): Melissa J. Dykhuis[1]
Institution(s): *[1.] University of Arizona, Tucson, AZ.*

400.05 In Search of the Source of Bennu, the OSIRIS-REx Sample Return Mission Target
Author(s): William Bottke[1], David Vokrouhlicky[2], Kevin Walsh[1], Marco Delbo[3], Patrick Michel[3], Dante S. Lauretta[4], Humberto Campins[5], Harold C. Connolly [6], Dan Scheeres[7], Steve Chesley[8]
Institution(s): *[1.] Southwest Research Inst., Boulder, CO. [2.] Charles U., Prague, Czech Republic. [3.] Cote d'Azur Obs., Nice, France. [4.] Univ. Arizona, Tucson, AZ. [5.] U. Central Florida, Orlando, FL. [6.] CUNY, New York, NY. [7.] U. Colorado, Boulder, CO. [8.] JPL, Pasadena, CA.*

400.06 A Look Inside Rotating Rubble-Pile Asteroids Spun to Disruption
Author(s): Diego Sanchez Lana[1], Daniel J. Scheeres[1]
Institution(s): *[1.] University of Colorado Boulder, Boulder, CO.*

400.07 Numerical Simulations of Microporous Body Disruptions: Comparison with Non-porous and Rubble-pile targets
Author(s): Patrick Michel[1], Martin Jutzi[3], Derek C. Richardson[2]
Institution(s): *[1.] University of Nice, CNRS, Côte d'Azur Observatory, Nice, France. [2.] University of Maryland, College Park, MD. [3.] University of Bern, Bern, Switzerland.*

400.08D Impact Simulations on the Rubble Pile Asteroid (2867) Steins
Author(s): Jakob Deller[1, 2], Colin Snodgrass[3, 1], Stephen C. Lowry[2], Mark C. Price[2], Holger Sierks[1]
Institution(s): *[1.] Max Planck Institute for Solar System Research, Göttingen, Germany. [2.] CAPS, University of Kent, Canterbury, United Kingdom. [3.] The Open University, Milton Keynes, United Kingdom.*

400.09 Validating SESAME Equations of State for Use in Hydrocode Models of Small Solar System Bodies
Author(s): Plesko Catherine[1], Jim Ferguson[1], Galen R. Gisler[1], Robert P. Weaver[1]
Institution(s): *[1.] Los Alamos National Laboratory, Los Alamos, NM.*

401 Pluto 1: Mostly Atmosphere

Thursday, 8:30 am - 10:00 am; Arizona Ballroom 7

Chair(s): John Stansberry *(Space Telescope Science Institute)* **&**
Leslie Young *(Southwest Research Inst.)*

401.01 Evidence of Haze in Pluto's Lower Atmosphere in 2011
Author(s): Amanda Gulbis[1, 2], Joshua P. Emery[3], Michael J. Person[2], Amanda S. Bosh[2], Carlos A. Zuluaga[2], Jay M. Pasachoff[4]
Institution(s): *[1.] South African Astronomical Observatory, Cape Town, Western Cape, South Africa. [2.] Massachusetts Institute of Technology, Cambridge, MA. [3.] University of Tennessee, Knoxville, TN. [4.] Williams College, Williamstown, MA.*

401.02 A Detailed Look at a Pluto Central Flash Occultation: Limits on Pluto's Haze Opacity, Oblateness and Surface Frost Pressure
Author(s): Eliot F. Young[1], Catherine B. Olkin[1], Leslie A. Young[1], Robert R. Howell[2], Richard G. French[3]
Institution(s): *[1.] Southwest Research Inst., Boulder, CO. [2.] University of Wyoming, Laramie, WY. [3.] Wellesley College, Wellesley, MA.*

401.03 Keck/NIRSPEC High-Resolution Spectra of Pluto: A Search for Cold Gaseous CH4 Layer and Spatial Variation In CH4 Column Abundance
Author(s): Leslie Young[1], Jason C. Cook[1], Henry G. Roe[2], S. Alan Stern[1]
Institution(s): *[1.] Southwest Research Inst., Boulder, CO. [2.] Lowell Observatory, Flagstaff, AZ.*

401.04 Gemini North/NIRI Spectra of Pluto and Charon: Simultaneous Analysis of the Surface and Atmosphere
Author(s): Jason C. Cook[1], Dale P. Cruikshank[2], Leslie A. Young[1]
Institution(s): *[1.] Southwest Research Institute, Boulder, CO. [2.] NASA Ames Research Center, Moffett Field, CA.*

401.05 Atmospheric CO on Pluto: Limits from Millimeter-wave Spectroscopy
Author(s): Mark A. Gurwell[1], Bryan J. Butler[2], Arielle Moullet[3]
Institution(s): *[1.] Harvard-Smithsonian CfA, Cambridge, MA. [2.] NRAO-Socorro, Socorro, NM. [3.] NRAO-Charlottesville, Charlottesville, VA.*

401.06 Charge-Exchange X-rays: Limits on Pluto's Atmospheric Escape Rate
Author(s): Ralph L. McNutt[1], Carey M. Lisse[1], Alan Stern[2], Thomas E. Cravens[3], Matthew E. Hill[1], Darrell F. Strobel[6], Xun Zhu[1], Heather A. Elliott[4], Ara Chutjian[5], Harold A. Weaver[1], David J. McComas[4], Scott J. Wolk[7], Leslie A. Young[2]
Institution(s): *[1.] Johns Hopkins University Applied Physics Laboratory, Laurel, MD. [2.] Southwest Research Institute, Boulder, CO. [3.] University of Kansas, Lawrence, KS. [4.] Southwest Research Institute, San Antonio, TX. [5.] Jet Propulsion Laboratory, Pasadena, CA. [6.] Johns Hopkins University, Baltimore, MD. [7.] Harvard-Smithsonian Center for Astrophysics, Cambridge, MA.*

401.07 Pluto's Insolation History: Latitudinal Variations and Effects on Atmospheric Pressure
Author(s): Alissa M. Earle[1], Richard P. Binzel[1]
Institution(s): *[1.] Massachusetts Institute of Technology, Cambridge, MA.*

401.08 The Influence of Topography on Volatile Transport
Author(s): John A. Stansberry[1], Will Grundy[2], Leslie Young[3]
Institution(s): *[1.] Space Telescope Science Institute, Baltimore, MD. [2.] Lowell Observatory, Flagstaff, AZ. [3.] Southwest Research Institute, Boulder, CO.*

401.09 Escape Erosion and Relaxation of Craters on Pluto
Author(s): Simon Porter[1], Amanda Zangari[1], S. Alan Stern[1]
Institution(s): *[1.] Southwest Research Institute, Boulder, CO.*

402 Planetary Rings

Thursday, 8:30 am - 10:00 am; Arizona Ballroom 11/ 12

Chair(s): Linda Spilker *(JPL)* **& Radwan Tajeddine** *(Cornell University)*

402.01 F Ring Core Stability: Corotation Resonance Plus Antiresonance
Author(s): Jeffrey N. Cuzzi[1], Essam Marouf[2], Richard French[3], Robert Jacobson[4]
Institution(s): *[1.] NASA Ames Research Center, Moffett Field, CA. [2.] San Jose State University, San Jose, CA. [3.] Wellesley College, Wellesley, MA. [4.] JPL, Pasadena, CA.*

402.02 Investigating Non-icy Material Fraction from Microwave Emission
Author(s): Zhimeng Zhang[1], Alex Hayes[1], Mike Janssen[2], Phillip Nicholson[1], Jeff Cuzzi[3], David Dunn[4], Imke de Pater[5]
Institution(s): *[1.] Astronomy, Cornell University, Ithaca, NY. [2.] Jet Propulsion Laboratory, Pasadena, CA. [3.] NASA Ames Research Center, Moffett Field, CA. [4.] Sierra College, Rocklin, CA. [5.] University of California, Berkeley, Berkeley, CA.*

402.03 Scattering by Gravitational Wakes in Saturn's A-Ring & Inference of Wake Sizes from Multiple Cassini Radio Occultations
Author(s): Essam A. Marouf[1], Kwok K. Wong[1], Richard G. French[2], Nicole J. Rappaport[3], Colleen A. McGhee-French[2]
Institution(s): *[1.] San Jose State Univ., San Jose , CA. [2.] Wellesley College, Wellesley, MA. [3.] Formerly with the Jet Propulsion Laboratory, Pasadena, CA.*

402.04 Effects of Janus' orbit change every four years on Saturn's A ring
Author(s): Maryame El Moutamid[1], Philip Nicholson[1], Carl Murray[2], Richard **French[3], Matthew Tiscareno[1]**, Matthew Hedman[4], Joseph Burns[1], Radwan Tajeddine[1]
Institution(s): *[1.] Cornell University, Ithaca, NY. [2.] Queen Mary University , London, United Kingdom. [3.] Wellesley College, Wellesley, MA. 4. Idaho University, Moscow, ID.*

402.05 Prometheus and the Keeler gap
Author(s): Radwan Tajeddine[1], Phillip D. Nicholson[1], Matthew M. Hedman[3], Richard G. French[2], Matthew S. Tiscareno[1], Joseph A. Burns[1]
Institution(s): *[1.] Cornell University, Ithaca, NY. [2.] Wellesley College, Wellesley, MA. [3.] University of Idaho, Moscow, ID.*

402.06 A new moon-induced structure
Author(s): Nicole Albers[1]
Institution(s): *[1.] LASP/University of Colorado, Boulder, CO.*

402.07 Modeling Diffraction Spikes to Characterize the Particle Size Distribution in Saturn's A Ring
Author(s): Tracy M. Becker[1], Joshua E. Colwell[1], Larry W. Esposito[2]
Institution(s): *[1.] University of Central Florida, Orlando, FL. [2.] LASP, University of Colorado, Boulder, Boulder, CO.*

402.08 An Unusual Feature in A-ring Janus Density Waves
Author(s): Morgan Rehnberg[1], Larry W. Esposito[1], Miodrag Srem?evi?[1], Nicole Albers[1]
Institution(s): *[1.] University of Colorado - Boulder / LASP, Boulder, CO.*

402.09D Results from a survey of the dynamics shaping Uranus' Mab/?-ring system
Author(s): Kartik Kumar[1], Imke de Pater[1, 2], Mark R. Showalter[3]
Institution(s): *[1.] Delft University of Technology, Delft, Netherlands. [2.] University of California-Berkeley, Berkeley, CA. [3.] SETI Institute, Mountain View, CA.*

403 Near-Earth Asteroid Dynamics

Thursday, 10:30 am - 12:00 pm; Tucson Ballroom E/F

Chair(s): William Bottke *(Southwest Research Inst.)* **&**
Catherine Plesko *(Los Alamos National Laboratory)*

403.01 NASA's Asteroid Redirect Mission: The Boulder Capture Option
Author(s): Paul Abell[1], Joseph A. Nuth[2], Dan D. Mazanek[3], Raymond G. Merrill[3], David M. Reeves[3], Bo J. Naasz[2]
Institution(s): *[1.] NASA Johnson Space Center, Houston, TX. [2.] NASA Goddard Space Flight Center, Greenbelt, MD. [3.] NASA Langley Research Center, Hampton, VA.*

403.02 Detecting NEO Impacts using the International Monitoring System
Author(s): Peter G. Brown[1], Kimberlee Dube[1], Elizabeth Silber[1]
Institution(s): *[1.] Dept. of Physics and Astronomy, University of Western Ontario, London, ON, Canada.*

403.03 Orbit Estimation for Late Warning Asteroid Impacts: The Case of 2014 AA
Author(s): Steven R. Chesley[1], Davide Farnocchia[1], Peter Brown[2], Paul W. Chodas[1]
Institution(s): *[1.] Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA. [2.] University of Western Ontario, London, ON, Canada.*

403.04 Apophis: complex rotation and hazard assessment
Author(s): Davide Farnocchia[1], Steven R. Chesley[1], David Vokrouhlicky[2], Thomas G. Mueller[3]
Institution(s): *[1.] JPL, Pasadena, CA. [2.] Charles University, Prague, Prague, Czech Republic. [3.] Max Planck Institute for Extraterrestrial Physics, Garching, Bavaria, Germany.*

403.05 Properties of Earth's temporarily-captured flybys
Author(s): Grigori Fedorets[1], Mikael Granvik[1, 2]
Institution(s): *[1.] University of Helsinki, Helsinki, Finland. [2.] Finnish Geodetic Institute, Masala, Finland.*

403.06 Depletion of the Near-Earth-Asteroid Population at Small Perihelion Distances
Author(s): Mikael Granvik[1], Alessandro Morbidelli[2], Robert Jedicke[3], Bill Bottke[4], Bryce Bolin[3], Edward Beshore[6], David Vokrouhlicky[5], David Nesvorny[4], Patrick Michel[2]
Institution(s): *[1.] Department of Physics, University of Helsinki, University of Helsinki, Finland. [2.] Observatoire de la Cote d'Azur, Nice, France. [3.] University of Hawaii, Honolulu, HI. [4.] Southwest Research Institute, Boulder, CO. [5.] Charles University, Prague, Czech Republic. [6.] University of Arizona, Tucson, AZ.*

403.07 The population of small NEAs
Author(s): Alan W. Harris[1]
Institution(s): *[1.] MoreData!, La Canada, CA.*

403.08 Rejuvenating NEOs: the Efficiency of Asteroid Resurfacing via Planetary Flybys
Author(s): James T. Keane[1], Isamu Matsuyama[1]
Institution(s): *[1.] University of Arizona, Tucson, AZ.*

403.09 The Nearest of the Near Earth Asteroids
Author(s): Stephen J. Kortenkamp[1, 2]
Institution(s): *[1.] Planetary Science Institute, Tucson, AZ. [2.] Lunar and Planetary Lab, Tucson, AZ.*

404 Pluto 2: Mostly Surface

Thursday, 10:30 am - 12:00 pm; Arizona Ballroom 7

Chair(s): William Grundy *(Lowell Obs.)* **& Amanda Zangari** *(SwRI)*

404.01 The Size of Pluto
Author(s): David J. Tholen[1]
Institution(s): *[1.] Univ. of Hawaii, Honolulu, HI.*

404.02 Impact and Cratering History of the Pluto System
Author(s): Sarah Greenstreet[1], Brett Gladman[1], William B. McKinnon[2]
Institution(s): *[1.] University of British Columbia, Vancouver, BC, Canada. [2.] Washington University, St. Louis, MO.*

404.03 Medium-resolution (R~3800) Near-infrared Spectrum of Charon from 1.47-2.38 ?m
Author(s): Bryan J. Holler[1], Leslie A. Young[2], Marc W. Buie[2], Eliot F. Young[2], Henry G. Roe[3]
Institution(s): *[1.] Laboratory for Atmospheric and Space Physics, Boulder, CO. [2.] Southwest Research Institute, Boulder, CO. [3.] Lowell Observatory, Flagstaff, AZ.*

404.04 New rotationally resolved spectra of Pluto-Charon from 350 - 900 nm
Author(s): Henry B. Throop[1, 2], Amanda Gulbis[4], Will Grundy[5], Leslie A. Young[3], Cathy B. Olkin[3]
Institution(s): *[1.] University of Pretoria, Pretoria, Gauteng, South Africa. [2.] Planetary Science Institute, Tucson, AZ. [3.] Southwest Research Institute, Boulder, CO. [4.] South African Astronomical Observatory, Cape Town, Western Cape, South Africa. [5.] Lowell Observatory, Flagstaff, AZ.*

404.05 Diurnal and Seasonal Variations of Pluto's surface composition through Spitzer Space telescope eyes
Author(s): Noemi Pinilla-Alonso[1], Joshua P. Emery[1], Dale P. Cruikshank[2], Silvia Protopapa[3], Will Grundy[4], Carey M. Lisse[5], James Bauer[6], Yanga Fernandez[7], John Stansberry[8], Bonnie J. Buratti[6]
Institution(s): *[1.] Department of Earth and Planetary Sciences, University of Tennessee, Knoxville, TN. [2.] NASA Ames Research Center, Moffett Field, CA. [3.] University of Maryland, College Park, MD. [4.] Lowell Observatory, Flagstaff, AZ. [5.] Johns Hopkins University Applied Physics Laboratory, Laurel, MD. [6.] Jet Propulsion Laboratory, California Inst. of Technology, Pasadena, CA. [7.] University of Central Florida, Orlando, FL. [8.] Space Telescope Science Institute, Baltimore, MD.*

404.06 Continued Volatile Transport on Pluto: First Results from the 2014 Observing Season
Author(s): Bonnie J. Buratti[1], Michael D. Hicks[1], Paul A. Dalba[1], Devin S. Chu[1], Ariel O'Neill[1], John K. Hillier[2], Sophianna Banholzer[1]
Institution(s): *[1.] Jet Propulsion Laboraory, California Inst. Technology, Pasadena, CA. [2.] Grays Harbor College, Aberdeen, WA.*

404.07 The methane–nitrogen mixing ratio across the surface of Pluto by means of a two-phase Hapke model
Author(s): Silvia Protopapa[1], Will M. Grundy[2], Stephen C. Tegler[3]
Institution(s): *[1.] University of Maryland , College Park, MD. [2.] Lowell Observatory, Flagstaff, AZ. [3.] Department of Physics and Astronomy, Northern Arizona University, Flagstaff, AZ.*

404.08 The Infrared Optical Constants of Ethane and Ethylene Ices: Relevance to Pluto and Triton
Author(s): Perry A. Gerakines[1], Reggie L. Hudson[1], Marla H. Moore[1]
Institution(s): *[1.] Astrochemistry Laboratory, NASA Goddard Space Flight Center, Greenbelt, MD.*

404.09 Laboratory Investigations of Complex Refractory Organic Material Produced from Irradiation of Pluto Ice Analogs
Author(s): Christopher K. Materese[1, 2], Dale P. Cruikshank[1], Scott A. Sandford[1], Hiroshi Imanaka[1, 3]
Institution(s): *[1.] NASA - Ames Research Center, Sunnyvale, CA. [2.] Oak Ridge Associated Universities, Oak Ridge, TN. [3.] SETI Institute, Mountain View, CA.*

405 Active Icy Worlds

Thursday, 10:30 am - 12:00 pm; Arizona Ballroom 11/ 12

Chair(s): Isamu Matsuyama *(University of Arizona)* **&**
Alyssa Rhoden *(NASA Goddard)*

405.01 Curtains for Enceladus
Author(s): Joseph N. Spitale[1], Terry A. Hurford[2], Alyssa R. Rhoden[3], Emily E. Berkson[4], Symeon S. Platts[5]
Institution(s): *[1.] Planetary Science Institute, Tucson, AZ. [2.] NASA Goddard Space Flight Center, Greenbelt, MD. [3.] Johns Hopkins University Applied Physics Laboratory, Laurel, MD. [4.] Rochester Institute of Technology, Rochester, NY. [5.] University of Arizona, Tucson, AZ.*

405.02 Enceladus' enigmatic heat flow
Author(s): Carly Howett[1], John Spencer[1], Anne Verbiscer[2]
Institution(s): *[1.] SouthWest Research Institute, Boulder, CO. [2.] University of Virginia, Charlottesville, VA.*

405.03 Possible evidence for a methane source in Enceladus' internal ocean
Author(s): Alexis Bouquet[1, 2], Olivier Mousis[3], Jack H. Waite[2], Sylvain Picaud[3]
Institution(s): *[1.] Physics & Astronomy, University of Texas at San Antonio, San Antonio, TX. [2.] Southwest Research Institute, San Antonio, TX. [3.] Université de Franche-Comté, institut UTINAM, Besançon, France.*

405.04 Linking Europa's Plume Activity to Tides, Tectonics, and Liquid Water
Author(s): Alyssa R. Rhoden[1, 2], Terry Hurford[1], Lorenz Roth[3], Kurt Retherford[3]
Institution(s): *[1.] JHU/APL, Laurel, MD. [2.] NASA GSFC, Greenbelt, MD. [3.] SWRI, San Antonio, TX.*

405.05 New Observations of Europa's Surface Composition: Discovery of an Anti-Jovian Salty Region
Author(s): Patrick D. Fischer[1], Michael E. Brown[1], Kevin P. Hand[2]
Institution(s): *[1.] Caltech, Pasadena, CA. [2.] JPL, Pasadena, CA.*

405.06 New constraints on the surface properties of Triton
Author(s): Frederic Merlin[1], E. Lellouch[2], E. Quirico[3], A. Barucci[2], B. Schmitt[3], D. Perna[2], C. Dumas[4]
Institution(s): *[1.] LESIA, Observatoire de Paris, Universite Denis Diderot Paris 7, Paris, France. [2.] LESIA, Observatoire de Paris, Paris, France. [3.] IPAG/PLANETO Université Joseph Fourier, Grenoble, France. [4.] ESO Office, Santiago, Chile.*

405.07 Tidal Dissipation in the Oceans of Icy Satellites
Author(s): Isamu Matsuyama[1]
Institution(s): *[1.] University of Arizona, Tucson, AZ.*

405.08 Impact Rates on Giant Planet Satellites: Checking Our Assumptions
Author(s): Henry C. Dones[1], Kevin J. Zahnle[2], Harold F. Levison[1]
Institution(s): *[1.] Southwest Research Inst., Boulder, CO. [2.] NASA Ames Research Center, Moffett Field, CA.*

405.09 Towards a Unified Theory of Impacts and Crater Populations on Icy Satellites
Author(s): Edward B. Bierhaus[1], Stuart Robbins[2], Luke Dones[2]
Institution(s): *[1.] Lockheed Martin, Denver, CO. [2.] Southwest Research Institute, Boulder, CO.*

NRAO Community Event

Thursday, 12:00 pm - 1:30 pm; Tucson Ballroom G

The National Radio Astronomy Observatory (NRAO) cordially invites you to a NRAO Community Event at the 46th DPS meeting. This event is specifically designed for the planetary science community, and in particular for those who do not regularly utilize radio data in their research. If you would like to learn more about the science that is possible with NRAO facilities for Solar System research and the proposal/observations process - this session is for you. We will provide a brief overview of the NRAO facilities and their instruments followed by broad talks describing the variety of Solar System submm, mm and cm observations. We will discuss practical information on how to design and optimize proposals for the EVLA, GBT and ALMA. No registration is required to attend the event but we will provide lunch for those registering early on our website (http://science.nrao.edu/facilities/alma/naasc-workshops/nrao-cd-dps2014). We strongly encourage early registration on our website so that we can best organize the event and add you to the event e-mail list for further communication.
Organizer(s): Arielle Moullet *(NRAO)*

406 OPAG Townhall

Thursday, 12:00 pm - 1:30 pm; Arizona Ballroom 1-4

This townhall will solicit community feedback on the new draft OPAG science goals document.
Organizer(s): Candice Hansen *(PSI)*

Presentation of the Harold Masursky Award and the Jonathan Eberhart Planetary Sciences Journalism Award

Thursday, 1:30 pm - 1:45 pm; Tucson Ballroom E/F

Chair(s): Heidi Hammel *(AURA)*

407 Plenary Talk: What's Going on Around the Outer Planets? A Report on Recent Ring Research, Matthew Hedman (University of Idaho)

Thursday, 1:45 pm - 2:20 pm; Tucson Ballroom E/F

Chair(s): Mark Showalter *(SETI Institute)*
Joseph Spitale *(Planetary Science Institute)*

407.01 What's going on around the outer planets? A Report on Recent Ring Research
Author(s): Matthew M. Hedman[1]
Institution(s): *[1] University of Idaho, Moscow, ID.*

408 Plenary Talk: Dense and Narrow Rings Around the Centaur Object (10199) Chariklo, Bruno Sicardy (Observatoire de Paris)

Thursday, 2:20 pm - 2:40 pm; Tucson Ballroom E/F

Chair(s): Mark Showalter *(SETI Institute)*
Joseph Spitale *(Planetary Science Institute)*

408.01 Dense and narrow rings around the Centaur object (10199) Chariklo
Author(s): Bruno Sicardy[1], Felipe Braga-Ribas[2], Jose Luis Ortiz[3], Roberto Vieira-Martins[2], Francois Colas[4], Rene Duffard[3], Julio I. Camargo[2], Josselin Desmars[2], Amanda Gulbis[5, 6], Marcelo Assafin[7], Lucie Maquet[1], Wolfgang Beisker[8], Gustavo Benedetti-Rossi[2, 1], Frederic Vachier[4], Christophe Dumas[9], Valentin D. Ivanov[9], Stefan Renner[4, 10], Karl-Ludwig Bath[11], Alain Klotz[12], Joseph T. Pollock[13], Jean Lecacheux[1], Jean-Luc Dauvergne1[4], Andre Peyrot[15], Jean-Paul Teng[15]

Institution(s): *[1.] Observatoire de Paris LESIA, Univ. Pierre et Marie Curie, Meudon, France. [2.] Observatorio Nacional, GPA, Rio de Janeiro, Brazil. [3.] Instituto de Astrofisica de Andalucia, Granada, Spain. [4.] Observatoire de Paris, IMCCE, Paris, France. [5.] Massachusetts Institute of Technology, Cambridge, MA. [6.] South African Astronomical Observatory, Cape Town, South Africa. [7.] Observatorio do Valongo, Rio de Janeiro, Brazil. [8.] International Occultation Timing Association, Hannover, Germany. [9.] European Southern Observatory, Santiago, Chile. [10.] Universite de Lille, Villeneuve d'Ascq, France. [11.] Internationale Amateursternwarte, Heidelberg, Germany. [12.] Universite de Toulouse, Toulouse, France. [13.] Appalachian State University, Boone, NC. [14.] Ciel et Espace, Paris, France. [15.] Association Astronomique de La Reunion, La Reunion, France.*

409 Asteroid Physical Characterization 1: Close Encounters

Thursday, 3:00 pm - 4:00 pm; Tucson Ballroom E/F

Chair(s): Marina Brozovic *(Jet Propulsion Laboratory/Caltech)* **& Alessondra Springmann** *(University of Arizona)*

409.01 Goldstone and Arecibo Radar Images of Near-Earth Asteroid 2014 HQ124

Author(s): Lance A. Benner[1], Marina Brozovic[1], Jon D. Giorgini[1], Michael W. Busch[2], Michael C. Nolan[3], Patrick A. Taylor[3], Ellen S. Howell[3], Alessondra Springmann[3], Joseph S. Jao[1], Clement G. Lee[1], Martin A. Slade[1], Amanda K. Mainzer[1], Joseph T. Pollock[4], Daniel E. Reichart[4], Joshua B. Haislip[4], Aaron P. LaCluyze[4], Nathan R. Frank[4]

Institution(s): *[1.] JPL, Pasadena, CA. [2.] SETI Institute, Mountain View, CA. [3.] NAIC/Arecibo Observatory, Arecibo, Puerto Rico. [4.] University of North Carolina, Chapel Hill, Chapel Hill, NC.*

409.02 Radar-Derived Shape Model of Near-Earth Binary Asteroid System (285263) 1998 QE2

Author(s): Alessondra Springmann[1, 2], Patrick A. Taylor[2], Michael C. Nolan[2], Ellen S. Howell[2], Marina Brozovi?[3], Lance A. Benner[3], Jon D. Giorgini[3], Michael W. Busch[4], Jean-Luc Margot[5], Clement Lee[2], Joseph S. Jao[2], Dante S. Lauretta[1]

Institution(s): *[1.] Lunar & Planetary Laboratory, University of Arizona, Tucson, AZ. [2.] Arecibo Observatory, National Astronomy & Ionosphere Center, Arecibo, Puerto Rico. [3.] JPL/Caltech, Pasadena, CA. [4.] SETI Instiute, Mountain View, CA. [5.] UCLA, Los Angeles, CA.*

409.03 The Smallest Binary Asteroid? The Discovery of Equal-Mass Binary 1994 CJ1
Author(s): Patrick A. Taylor[1], Brian D. Warner[2], Christopher Magri[3], Alessondra Springmann[1, 4], Michael C. Nolan[1], Ellen S. Howell[1], Kevin J. Miller[5], Luisa F. Zambrano-Marin[1], James E. Richardson[1], Melissa Hannan[6], Petr Pravec[7]
Institution(s): *[1.] NAIC, Arecibo Observatory, Arecibo, Puerto Rico. [2.] MoreData!/ Palmer Divide Observatory, Colorado Springs, CO. [3.] University of Maine - Farmington, Farmington, ME. [4.] University of Arizona, Tucson, AZ. [5.] Millersville University, Millersville, PA. [6.] California State University, San Bernardino, San Bernardino, CA. [7.] Astronomical Institude, Academy of Science of the Czech Republic, Ondrejov, Ondrejov, Czech Republic.*

409.04 Radar evidence for diverse shapes of the primaries among binary near-Earth asteroids
Author(s): Marina Brozovic[1], Lance Benner[1], Thomas Ford[2], Alessondra Springmann[3, 4], Patrick Taylor[4], Michael Shepard[5], Jean-Luc Margot[6], Shantanu Naidu[6], Michael Nolan[4], Ellen Howell[4], Michael Busch[7], Jon Giorgini[1], Christopher Magri[8]
Institution(s): *[1.] Jet Propulsion Laboratory/Caltech, Pasadena, CA. [2.] Kennedy Space Center, Cape Canaveral, FL. [3.] University of Arizona, Tucson, AZ. [4.] Arecibo Observatory, Arecibo, Puerto Rico. [5.] Bloomsburg University, Bloomsburg, PA. [6.] University of California, Los Angeles, Los Angeles, CA. [7.] SETI, Mountain View, CA. [8.] University of Maine at Farmington, Farmington, ME.*

409.05 Recent Radar Speckle Observations of Near-Earth Asteroids
Author(s): Michael W. Busch[1], Lance Benner[2], Marina Brozovic[2], Michael C. Nolan[3], Alessondra Springmann[3, 4], Patrick A. Taylor[3]
Institution(s): *[1.] SETI Institute, Mountain View, CA. [2.] Jet Propulsion Laboratory, Pasadena, CA. [3.] Arecibo Observatory, Arecibo, Puerto Rico. [4.] University of Arizona, Tucson, AZ.*

409.06 Recent Arecibo Radar Observations of Main-Belt Asteroids.
Author(s): Michael K. Shepard[1], Ellen Howell[2], Michael Nolan[2], Patrick Taylor[2], Alessondra Springmann[2], Jon Giorgini[3], Lance Benner[3], Christopher Magri[4]
Institution(s): *[1.] Bloomsburg University, Bloomsburg, PA. [2.] Arecibo Observatory/ NAIC, Arecibo, Puerto Rico. [3.] Jet Propulsion Laboratory, Pasadena, CA. [4.] University of Maine at Farmington, Farmington, ME.*

410 Origins of Planetary Systems 1

Thursday, 3:00 pm - 4:00 pm; Arizona Ballroom 7

Chair(s): Jürgen Blum *(TU Braunschweig)*

410.01 From Dust to Protoplanets
Author(s): John E. Chambers[1]
Institution(s): *[1.] Carnegie Inst. of Washington, Washington, DC.*

410.02 The Formation of Terrestrial Planets from the Direct Accretion of Pebbles
Author(s): Harold F. Levison[1], Katherine Kretke[1], Kevin Walsh[1]
Institution(s): *[1.] Southwest Research Inst., Boulder, CO.*

410.03 Growth properties of protoplanetary dust in a long-term microgravity experiment
Author(s): Julie Brisset[1, 2], Stefan Kothe[2], Rene Weidling[2], Daniel Heisselmann[2], Juergen Blum[2]
Institution(s): *[1.] Physics, University of Central Florida, Orlando, FL. [2.] Technische Universitaet Braunschweig, Braunschweig, Germany.*

410.04 Microgravity collisions of dust aggregates as an analogue to early planetesimal formation
Author(s): Akbar Whizin[1], Jürgen Blum[2], Joshua Colwell[1]
Institution(s): *[1.] University of Central Florida, Orlando, FL. [2.] Technische Universität Braunschweig, Braunschweig, Lower Saxony, Germany.*

410.05 Gravitational Instability in Planetesimal Disks
Author(s): Bryce T. Bolin[1, 2], Yoram Lithwick[3], Margaret Pan[4], Hanno Rein[5], Yanqin Wu[6]
Institution(s): *[1.] Departement Lagrange, Obs. de La Cote D'Azur, Nice, France. [2.] University of Phoenix, Hawaii Campus, Honolulu, HI. [3.] Department of Physics and Astronomy, Northwestern University, Evanston, IL. [4.] NASA Goddard Space Flight Center, Exoplanets and Stellar Astrophysics Laboratory, Greenbelt, MD. [5.] University of Toronto, Department of Environmental and Physical Sciences, Toronto, ON, Canada. [6.] Department of Astronomy and Astrophysics, University of Toronto, Toronto, ON, Canada.*

410.06 Development of a Circum-Embryo Debris Disk Model Subject to Collisions from the Heliocentric Swarm
Author(s): Andrew Hesselbrock[1], Jennifer Larson[1], David Minton[1]
Institution(s): *[1.] Purdue University, West Lafayette, IN.*

411 Io, Jupiter's Volcanic Wonderland

Thursday, 3:00 pm - 4:00 pm; Arizona Ballroom 11/ 12

Chair(s): Constantine Tsang *(Southwest Research Institute)* **& Julie Rathbun** *(Univ. of Redlands)*

411.01 Constraining the volcanic contribution to Io's atmosphere with ALMA maps
Author(s): Arielle Moullet[1], Emmanuel Lellouch[2], Mark Gurwell[3], Raphael Moreno[2], John Black[4], Brian Butler[5]
Institution(s): *[1.] NRAO, Charlottesville, VA. [2.] LESIA - Observatoire de Paris, Meudon, France. [3.] Harvard-Smithsonian Center for Astrophysics, Cambridge, MA. [4.] NRAO, Socorro, NM. [5.] Chalmers University of Technology, Onsala Space Observatory, Onsala, Sweden.*

411.02 Io's Primary Atmosphere In Eclipse: First Observations from Gemini-TEXES
Author(s): Constantine Tsang[1], John Spencer[1], Matthew Richter[2], Emmanuel Lellouch[3], Miguel Lopez-Valverde[4]
Institution(s): *[1.] Southwest Research Institute, Boulder, CO. [2.] University of California at Davis, Department of Physics, Davis, CA. [3.] Observatories de Meudon, Paris, Meudon, France. [4.] Instituto Astrofisica de Andalucia, Granada, Spain.*

411.03 Simulations of the Effects of Jupiter's Plasma Torus on Io's Pele Plume
Author(s): William McDoniel[1], David B. Goldstein[1], Philip L. Varghese[1], Laurence M. Trafton[1]
Institution(s): *[1.] The University of Texas at Austin, Austin, TX.*

411.04 Observations of Massive Volcanic Eruptions on the Jovian Moon Io in August 2013: A Template for Unravelling the Mysteries of Large Lava Flow Emplacement on the Terrestrial Planets
Author(s): Ashley Davies[1], Imke de Pater[2], Katherine de Kleer[2]
Institution(s): *[1.] Jet Propulsion Laboratory-California Institute of Technology, Pasadena, CA. [2.] University of California, Berkeley, Berkeley, CA.*

411.05D Numerical simulations of convection and melt migration in Io's mantle
Author(s): Catherine M. Elder[1], Paul J. Tackley[2], Adam P. Showman[1]
Institution(s): *[1.] Lunar and Planetary Laboratory, Tucson, AZ. [2.] ETH Zurich, Zurich, Switzerland.*

411.06 Temperature and Structure of Active Eruptions from a Handheld Camcorder
Author(s): Jani Radebaugh[1], Greg T. Carling[1], Takeshi Saito[2], Anne Dangerfield[1], David G. Tingey[1], Ralph D. Lorenz[3], Rosaly M. Lopes[4], Robert R. Howell[5], Serina Diniega[4], Elizabeth P. Turtle[3]
Institution(s): *[1.] Brigham Young University, Provo, UT. [2.] Shinshu University, Matsumoto, Nagano, Japan. [3.] Johns Hopkins Applied Physics Laboratory, Laurel, MD. [4.] Jet Propulsion Laboratory, Pasadena, CA. [5.] University of Wyoming, Laramie, WY.*

412 Mars Atmosphere Posters

Thursday, 4:00 pm - 6:00 pm; Star Circle Pavilion/Arizona Ballroom 6

Chair(s): Stephen Bougher *(Univ. of Michigan)* **&**
Christina Holstein-Rathlou *(Boston University)*

412.01 Atmospheric properties reconstruction from the Mars Science Laboratory Entry, Descent and Landing
Author(s): Christina Holstein-Rathlou[1], Paul Withers[1]
Institution(s): *[1.] Center for Space Physics, Boston University, Boston, MA.*

412.02 Ice Cloud Optical Depth Retrievals from CRISM Multispectral Images
Author(s): David R. Klassen[1]
Institution(s): *[1.] Rowan Univ., Glassboro, NJ.*

412.03 Maps of [HDO]/[H2O] on Mars near Northern Solstice (Ls = 87°) and mid-Summer (Ls =141°) in 2014
Author(s): Robert E. Novak[1], Michael J. Mumma[2], Geronimo L. Villanueva[2, 3]
Institution(s): *[1.] Iona College, New Rochelle, NY. [2.] NASA-Goddard Space Flight Center, Greenbelt, MD. [3.] Catholic University of America, Washington, DC.*

412.04 A new search for active release of volcanic gases on Mars: Sensitive upper limits for OCS.
Author(s): Alain Khayat[1], Geronimo L. Villanueva[2, 3], Michael J. Mumma[2], Alan T. Tokunaga[1]
Institution(s): *[1.] Institute for Astronomy - University of Hawaii at Manoa, Honolulu, HI. [2.] NASA Goddard Space Flight Center, Greenbelt, MD. [3.] Catholic University of America, Washington, DC.*

412.05 Laboratory measurement of temperature dependent 13C and D kinetic isotope effect in the reaction of CH4 oxidation by O(1D)
Author(s): Linhan Shen[1], Thinh Q. Bui[1], Pin Chen[2], Mitchio Okumura[1]
Institution(s): *[1.] Chemistry, California Institute of Technology, Pasadena, CA. [2.] Jet Propulsion Laboratory, Pasadena, CA.*

412.06 O2 abundance on Mars observed by Mars Express / SPICAM
Author(s): Hannes Gröller[1], Bill R. Sandel[1], Roger V. Yelle[1], Tommi Koskinen[1], Nikole K. Lewis[2, 1], Jean-Loup Bertaux[3], Franck Montmessin[3], Eric Quémerais[3]
Institution(s): *[1.] Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ. [2.] Department of Earth, Atmospheric and Planetary Sciences, Massachusetts Institute of Technology, Cambridge, MA. [3.] LATMOS, Université Versailles Saint-Quentin / CNRS, Guyancourt, France.*

412.07 Time Dependent Responses of the Martian Upper Atmosphere to the 2001 Global Dust Storm using Mars GITM Simulations
Author(s): Stephen W. Bougher[1], David J. Pawlowski[2], James R. Murphy[3]
Institution(s): *[1.] University of Michigan, Ann Arbor, MI. [2.] Eastern Michigan University, Ypsilanti, MI. [3.] New Mexico State University, Las Cruces, NM.*

412.08 HST Observations of the Martian Hydrogen and Oxygen Exosphere
Author(s): John T. Clarke[1], Dolon Bhattacharyya[1], Jean-Loup Bertaux[1, 2], Jean-Yves Chaufray[2], Majd Matta[1], Justin Deighan[3], Roger Yelle[4], David Brain[3]
Institution(s): *[1.] Boston Univ., Boston, MA. [2.] LATMOS/CNRS, Guyancourt, France. [3.] U. Colorado, Boulder, CO. 4. U. Arizona, Tucson, AZ.*

412.09 Parameter Study of Plasma-Induced Atmospheric Sputtering and Heating at Mars
Author(s): Hayley N. Williamson[1], Robert E. Johnson[1], Francois Leblanc[2]
Institution(s): *[1.] Engineering Physics, University of Virginia, Charlottesville, VA. [2.] LATMOS-CNRS, IPSL/Université Pierre et Marie Curie, Paris, France.*

413 Mars Surface/Moon Posters

Thursday, 4:00 pm - 6:00 pm; Star Circle Pavilion/Arizona Ballroom 6

Chair(s): Diana Blaney *(JPL)*

413.01 A Physical Taxonomy of Martian Sand and Dust Grains at the Phoenix Landing Site
Author(s): John Marshall[1], Carol Stoker[2]
Institution(s): *[1.] SETI Institute, Mountain View, CA. [2.] NASA Ames, Mountain View, CA.*

413.02 Geology of the Tyrrhenus Mons Lava Flow Field, Mars
Author(s): David A. Crown[1], Scott C. Mest[1]
Institution(s): *[1, P]lanetary Science Inst., Tucson, AZ.*

413.03 Small-Scale Spectral and Color Analysis of Ritchey Crater Impact Materials
Author(s): Veronica Bray[1], Matthew Chojnacki[1], Alfred McEwen[1], Rodney Heyd[1]
Institution(s): *[1.] Lunar and Planetary Laboratory, Tucson, AZ.*

413.04 Active Mars Revealed through HiRISE DTMs and Orthoimages
Author(s): Sarah Mattson[1], Alfred S. McEwen[1], Nathan Bridges[2], Shane Byrne[1], Matthew Chojnacki[1], Ingrid Daubar[1], Colin Dundas[3], Patrick Russell[4]
Institution(s): *[1.] University of Arizona - Lunar and Planetary Laboratory, Tucson, AZ. [2.] Johns Hopkins University, Earth & Planetary Sciences Dept., Baltimore, MD. [3.] Astrogeology Science Center, U.S. Geological Survey, Flagstaff, AZ. [4.] Center for Earth and Planetary Sciences, Smithsonian Institution, Washington, DC.*
Contributing team(s): HiRISE Team

413.05 Sulfate Mineral Formation from Acid-weathered Phyllosilicates: Implications for the Aqueous History of Mars
Author(s): Patricia Craig[1], Douglas Ming[1], Elizabeth Rampe[1, 2]
Institution(s): *[1.] NASA Johnson Space Center, Houston, TX. [2.] Aerodyne Industries, Houston, TX.*

413.06 Predictions on the Deliquescence of Calcium Perchlorate at the MSL Landing Site
Author(s): Danielle Nuding[1], Edgard G. Rivera-Valentin[2]
Institution(s): *[1.] Jet Propulsion Laboratory, Pasadena, CA. [2.] Arecibo Observatory, Arecibo, Puerto Rico.*

413.07 Implementation the NASA Planetary Data System PDS4 Providing Access to LADEE Data
Author(s): Reta F. Beebe[1], Lyle Huber [1], Lynn Neakrase[1], Shannon Reese[1], Daniel Crichton[2], Sean Hardman[2], Gregory Delory[3], Carol Neese[4]
Institution(s): *[1.] New Mexico State Univ., Las Cruces, NM. [2.] Jet Propulsion Laboratory, Pasadena, CA. [3.] NASA AMES Research Center, Moffett Field, CA. [4.] Planetary Science institute, Tucson, AZ.*

413.08 Size-frequency Statistics of Boulders on the Moon – Characterizing the Surface Roughness of Ejecta Fields
Author(s): Alexandra Matiella Novak[1], Wes Patterson[1]
Institution(s): *[1.] Space, Johns Hopkins University Applied Physics Laborator, Laurel, MD.*

413.09 Evidence for Recent Extension and Volcanism inside the Southern Margin of Mare Frigoris
Author(s): Edward F. Albin[1], R. Scott Harris[1]
Institution(s): *[1.] Fernbank Science Center, Atlanta, GA.*

413.10 Modeling the Provenance of Crater Ejecta
Author(s): Ya-Huei Huang[1], David A. Minton[1]
Institution(s): *[1.] Earth, Atmospheric, and Planetary Sciences, Purdue University, West Lafayette, IN.*

413.11 Formation of Saturn's F ring by collision between rubble-pile satellites
Author(s): Ryuki Hyodo[1], Keiji Ohtsuki[1]
Institution(s): *[1.] Kobe University, Kobe, Japan.*

413.12 Mapping and Analysis of 'Dunes' in the Ejecta Blankets of Fresh Lunar Craters
Author(s): Corwin Atwood-Stone[1], Veronica Bray[1], Alfred McEwen[1]
Institution(s): *[1.] Planetary Science, University of Arizona, Tucson, AZ.*

414 Asteroid Observations and Modeling Posters

Thursday, 4:00 pm - 6:00 pm; Star Circle Pavilion/Arizona Ballroom 6

Chair(s): Peter Brown *(Univ. of Western Ontario)*

414.01 The DECam NEO Survey: A sensitive, wide-field search for near-Earth asteroids
Author(s): Lori Allen[1], David Trilling[2], Frank Valdes[1], Cesar Fuentes[2], David James[1], David Herrera[1], Jayadev Rajagopal[1], Brian Burt[3], Tim Axelrod[4]
Institution(s): *[1.] NOAO, Tucson, AZ. [2.] Northern Arizona University, Flagstaff, AZ. [3.] MIT, Cambridge, MA. [4.] University of Arizona, Tucson, AZ.*

414.02 The Mission Accessible Near-Earth Object Survey Public Database Development Effort
Author(s): Brian Burt[1], Nicholas Moskovitz[2], Lowell Putnam[2]
Institution(s): *[1.] EAPS, Massachusetts Institute of Technology, Brighton, MA. [2.] Lowell, Flagstaff, AZ.*
Contributing team(s): MANOS

414.03 Simulating the Performance of Ground-Based Optical Asteroid Surveys
Author(s): Eric J. Christensen[1], Frank C. Shelly[1], Alex R. Gibbs[1], Albert D. Grauer[1], Richard E. Hill[1], Jess A. Johnson[1], Richard A. Kowalski[1], Stephen M. Larson[1]
Institution(s): *[1.] University of AZ, Tucson, AZ.*

414.04 A new mechanism for the formation of regolith on asteroids
Author(s): Marco Delbo[1], Guy Libourel[2, 1], Justin Wilkerson[3], Naomi Murdoch[4], Patrick Michel[1], Kt Ramesh[3], Clement Ganino[2], Chrystele Verati[2], Simone Marchi[5]
Institution(s): *[1.] CNRS-Observatoire de la Cote d'Azur, Nice, France. [2.] CNRS-Observatoire de la Cote d'Azur - Laboratoire Geoazur, Nice, France. [3.] Johns Hopkins University, Baltimore, MD. [4.] Institut Superieur de l'Aeronautique et de l'Espace, Toulouse, France. [5.] Southwest Research Institute, Boulder, CO.*

414.05 The Undiscovered Country: How Many Low-Delta-V Near-Earth Objects Remain to be Found?
Author(s): Martin Elvis[1], Sukrit Ranjan[1], Jose Luis Galache[1]
Institution(s): *[1.] Harvard-Smithsonian CfA, Cambridge, MA.*

414.06 A 1-D Cryothermal Model of Ceres' Megaregolith: Predictions for Surface Vapor Flux, Subsurface Temperatures and Pore Ice Distribution
Author(s): Dylan Reynolds[1], Stephen E. Wood[1], Jonathan Bapst[1], Joshua Mehlhaff[1], Stephen G. Griffiths[2]
Institution(s): *[1.] Earth and Space Sciences , University of Washington, Redmond, WA. [2.] University of Leeds, Leeds, West Yorkshire, United Kingdom.*

414.07 DASTCOM5: A Portable and Current Database of Asteroid and Comet Orbit Solutions
Author(s): Jon D. Giorgini[1], Alan B. Chamberlin[1]
Institution(s): *[1.] Jet Propulsion Laboratory, California Institue of Technology, Pasadena, CA.*

414.08 Electrostatically-driven Dust Motion near Itokawa
Author(s): Christine Hartzell[1], Michael Zimmerman[2]
Institution(s): *[1.] University of Maryland, College Park, MD. [2.] Applied Physics Lab, Laurel, MD.*

414.09 The Catalina Sky Survey: Status, Discoveries and the Future
Author(s): Jess A. Johnson[1, 2], Eric J. Christensen1[, 2], Alex R. Gibbs[1, 2], Albert D. Grauer[1, 2], Richard E. Hill[1, 2], Richard A. Kowalski[1, 2], Steve M. Larson[1, 2], Frank J. Shelly[1, 2]
Institution(s): *[1.] Catalina Sky Survey, Tucson, AZ. [2.] Lunar & Planetary Laboratory, Tucson, AZ.*

414.10 The LCOGT Near Earth Object (NEO) Follow-up Network
Author(s): Tim Lister[1], Edward Gomez[1], Eric Christensen[2], Steve Larson[2]
Institution(s): *[1.] Las Cumbres Observatory, Goleta, CA. [2.] Catalina Sky Survey, Tucson, AZ.*

414.11 Spacewatch Observations of Asteroids and Comets Supporting the Large-Scale Surveys
Author(s): Robert S. McMillan[1], Terrence H. Bressi[1], James V. Scotti[1], Jeffrey A. Larsen[2, 1], Ronald A. Mastaler[1]
Institution(s): *[1.] Univ. of Arizona, Tucson, AZ. [2.] U. S. Naval Academy, Annapolis, MD.*

414.12 Delivery of Organic Material and Water through Asteroid Impacts
Author(s): Michael Mueller[1], Kateryna Frantseva[1, 2], Floris van der Tak[1, 2], Frank P. Helmich[1, 2]
Institution(s): *[1.] SRON Netherlands Institute for Space Research, Groningen, Netherlands. [2.] Kapteyn Astronomical Institute, University of Groningen, Groningen, Netherlands.*

414.13 Effect of the gas drag on the planetesimals in a Transitional Disk
Author(s): Sam Navarro-Meza[1], Mauricio Reyes-Ruiz[1], Hector Aceves-Campos[1]
Institution(s): *[1.] Instituo de Astronomia, UNAM, Ensenada, Baja California, Mexico.*

414.14 Evaluating Different Scenarios for the Formation and Early Evolution of the Asteroid Belt
Author(s): David P. O'Brien[1], Kevin J. Walsh[2]
Institution(s): *[1.] Planetary Science Institute, Tucson, AZ. [2.] Southwest Research Institute, Boulder, CO.*

414.15 Light-Scattering Simulations of Space-Weathering Effects on Asteroid and Meteorite Spectra
Author(s): Antti Penttilä[1], Tomas Kohout[1], Timo Väisänen[1], Karri Muinonen[1, 2], Julia Martikainen[1], Johannes Markkanen[1], Jouni Peltoniemi[1, 2]
Institution(s): *[1.] University of Helsinki, Helsinki, Finland. [2.] Finnish Geodetic Institute, Masala, Finland.*

414.16 The Stopping Power of Asteroidal Materials as High-Energy Charged Particle Shielding
Author(s): Leos Pohl[1], Daniel Johnson[1], Daniel Britt[1]
Institution(s): *[1.] Physics, University of Central Florida, Orlando, FL.*

414.17 Spacewatch Astrometry of Asteroids and Comets with the Bok 2.3-m and Mayall 4-m Telescopes.
Author(s): James V. Scotti[1], Robert S. McMillan[1], Jeffrey A. Larsen[2, 1]
Institution(s): *[1.] Univ. of Arizona, Tucson, AZ. [2.] U.S. Naval Academy, Annapolis, MD.*

414.18 Synthetic Tracking Observation of Near Earth Asteroids
Author(s): Michael Shao[1], Chengxing zhai[1], Slava Turyshev[1], Jagmit Sandhu[1], Gregg Hallinan[2], Leon Harding[2]
Institution(s): *[1.] JPL, Pasadena, CA. [2.] caltech, Pasadena, CA.*

414.19 The Pan-STARRS search for Near Earth Objects
Author(s): Richard J. Wainscoat[1], Bryce Bolin[1], Kenneth Chambers[1], Serge Chastel[1], Larry Denneau[1], Marco Micheli[1], Eva Schunova[1], Peter Veres[1]
Institution(s): *[1.] Univ. of Hawaii, Honolulu, HI.*

414.20 Digital Tracking Observations Discover Asteroids Ten Times Fainter than Conventional Searches
Author(s): Aren Heinze[1], Stanimir Metchev[2, 1]
Institution(s): *[1.] State University of NY, Stony Brook, Stony Brook, NY. [2.] University of Western Ontario, London, ON, Canada.*

415 Asteroid Physical Characterization Posters: Main Belt

Thursday, 4:00 pm - 6:00 pm; Star Circle Pavilion/Arizona Ballroom 6

Chair(s): Lucy-Ann McFadden *(NASA/GSFC)* **&**
Cristina Thomas *(NASA GSFC/ ORAU)*

415.01 Did Ordinary Chondrite Impactors Deliver Olivine to Vesta?
Author(s): Lucille Le Corre[1], Vishnu Reddy[1], Juan A. Sanchez[1], Edward A. Cloutis[2], Matthew R. Izawa[2], Paul Mann[2]
Institution(s): *[1.] Planetary Science Institute, Tucson, AZ. [2.] Department of Geography, University of Winnipeg, Winnipeg, MB, Canada.*

415.02 Vesta's Pinaria Region: Lower Crustal Composition and Regolith Mixing from Early Vesta
Author(s): Lucy-Ann A. McFadden[1], Eleonora Ammannito[2, 3], Jean-Philippe Combe[4], Cristina De Sanctis[3], Katrin Stephan[5], Carle Pieters[6], Andrea Nathues[7]
Institution(s): *[1.] NASA/GSFC, Greenbelt, MD. [2.] Institute of Geophysics and Planetary Physics, Los Angeles, CA. [3.] INAF Istituto di Astrofisica e Planetologia Spaziale, Roma, Area di Ricerca di Tor Vergata, Italy. [4.] Bear Fight Institute, Winthrop, WA. [5.] DLR, Institute of Planetary Research, Berlin, Germany. [6.] Brown University, Providence, RI. [7.] Max Planck Institute for Solar System Research, Goettingen, Germany.*
Contributing team(s): Dawn Science Team

415.03 Exogenous Olivine on Vesta
Author(s): Martin Hoffmann[1], Andreas Nathues[1], Michael Schäfer[1], Guneshwar Thangjam[1], Lucille Le Corre[2], Reddy Vishnu[2], Ulrich Christensen[1], Kurt Mengel[3], Holger Sierks[1], Jean-Baptist Vincent[1], Edward A. Cloutis[4], Christopher T. Russell[5], Tanja Schäfer[1], Pablo Gutierrez-Marques[1], Ian Hall[1], Joachim Ripken[1], Irene Büttner[1]
Institution(s): *[1.] Planets, Max-Planck-Institute for Solar System Research, Goettingen, Germany. [2.] Planetary Science Institute, Tucson, AZ. [3.] Clausthal University of Technology, Clausthal-Zellerfeld, Germany. [4.] Department of Geography, University of Winnipeg, Winnipeg, MB, Canada. [5.] Institute of Geophysics and Planetary Physics, University of California, Charles, CA.*

415.04 New lightcurve of asteroid (216) Kleopatra to evaluate the shape model
Author(s): Melissa A. Hannan[1], Ellen S. Howell[2], Laura M. Woodney[1], Patrick A. Taylor[2]
Institution(s): *[1.] California State University, San Bernardino, San Bernardino, CA. [2.] Arecibo Observatory, Arecibo, Puerto Rico.*

415.05 Updated Shape Model of 1627 Ivar from 2013 Observations
Author(s): Jenna L. Crowell[1], Ellen S. Howell[2], Christopher Magri[3], Yanga R. Fernandez[1], Sean E. Marshall[4], Brian D. Warner[5], Ronald J. Vervack[6]
Institution(s): *[1.] University of Central Florida, Orlando, FL. [2.] Arecibo Observatory, Arecibo, Puerto Rico. [3.] University of Maine at Farmington, Farmington, ME. [4.] Cornell University, Ithaca, NY. [5.] Center for Solar System Studies - Palmer Divide Station, Landers, CA. [6.] The John Hopkins University/Applied Physics Laboratory, Laurel, MD.*

415.06 Colors and spin period distributions of sub-km main belt asteroids
Author(s): Fumi Yoshida[1], Hsing-Wen Lin[2], Ying-Tung Chen[3], Damya Souami[4, 5], Sebastien Bouquillon[6], Wing-Huen Ip[2, 9], Chan-Kao Chang[2], Tsuko Nakamura[7], Budi Dermawan[8], Masafumi Yagi[1], Jean Souchay[6]
Institution(s): *[1.] National Astronomical Observatory of Japan, Tokyo, Japan. [2.] National Central University, Taoyuan, Taiwan. [3.] Institute of Astronomy and Astrophysics, Academia Sinica, Taipei, Taiwan. [4.] University of Namur, Namur, Belgium. [5.] Universite Pierre & Marie Curie, Paris, France. [6.] Observatoire de Paris, Paris, France. [7.] The Open University of Japan, Tokyo, Japan. [8.] Bandung Institute of Technology, Bandung, Indonesia. [9.] Macau University of Science and Technology, Taipa, Macao.*

415.07 Orbital Measurement of Bulk Carbon, Hydrogen, Oxygen, and Sulfur of Carbonaceous Asteroids via High Energy Resolution Gamma-Ray Spectroscopy
Author(s): Lucy F. Lim[1], Richard D. Starr[2], Larry G. Evans[3], Ann M. Parsons[1], Michael E. Zolensky[4], William V. Boynton[5], Cristina A. Thomas[6, 1]
Institution(s): *[1.] NASA / GSFC, Greenbelt, MD. [2.] Catholic University of America, Washington, DC. [3.] Computer Sciences Corporation, Lanham, MD. [4.] NASA/JSC, Houston, TX. [5.] University of Arizona, Tucson, AZ. [6.] ORAU/NPP, Greenbelt, MD.*

415.08 Spectropolarimetry of X-type Asteroids to Constrain the Wavelength Dependence of Polarization
Author(s): Chester Maleszewski[1], Paul S. Smith[1]
Institution(s): *[1.] University of Arizona, Tucson, AZ.*

415.09 Distributions of spin/shape parameters of asteroid families and targeted photometry by ProjectSoft robotic observatory
Author(s): Miroslav Broz[1], Josef Durech[1], Josef Hanus[1], Martin Lehky[1]
Institution(s): *[1.] Astronomical Institute, Charles University in Prague, Prague, Czech Republic.*

415.10 Simulations of asteroid surfaces and interiors using geometric optics
Author(s): Anne Virkki[1], Karri Muinonen[1, 2], Antti Penttilä[1]
Institution(s): *[1.] University of Helsinki, Helsinki, Finland. [2.] Finnish Geodetic Institute, Masala, Finland.*

415.11 Artificial size frequency distribution indices in laboratory experiments: Implications for understanding the evolution of Itokawa
Author(s): Jessica Noviello[1, 2], Olivier S. Barnouin[2, 4], Carolyn M. Ernst[2], Michael Daly[3]
Institution(s): *[1.] Arizona State University, Tempe, AZ. [2.] The Johns Hopkins University Applied Physics Laboratory, Laurel, MD. [3.] Dept. of Earth and Space Sciences and Engineering, York University, Toronto, ON, Canada. [4.] The Johns Hopkins University, Baltimore, MD.*

415.12 Coherent Backscattering by Particulate Planetary Media of Nonspherical Particles
Author(s): Karri Muinonen[1, 2,] Antti Penttila[1], Olli Wilkman[1], Gorden Videen[3]
Institution(s): *[1.] Department of Physics, University of Helsinki, Helsinki, Finland. [2.] Finnish Geodetic Institute, Masala, Finland. [3.] Space Science Institute, Boulder, CO.*

415.13 The Rotational Properties of Multi-tailed Asteroid P/2013 P5
Author(s): Annika Gustafsson[1, 2], Nicholas Moskovitz[1], Stephen Levine[1]
Institution(s): *[1.] Lowell Observatory, Flagstaff, AZ. [2.] University of Oregon, Scotts Valley, CA.*

415.14 The color-magnitude distribution of small Jupiter Trojans
Author(s): Ian Wong[1], Michael E. Brown[1], Joshua P. Emery[2]
Institution(s): *[1.] CALTECH, Pasadena, CA. [2.] University of Tennessee, Knoxville, TN.*

415.15 Picking Sides: Classifying Jupiter's Greeks and Trojans
Author(s): Joseph Chatelain[1], Todd J. Henry[1], Linda M. French[2], David E. Trilling[3]
Institution(s): *[1.] Georgia State University, Atlanta, GA. [2.] Illinois Wesleyan University, Bloomington, IL. [3.] Northern Arizona University, Flagstaff, AZ.*

415.16 An Experimental Path to Constraining the Origins of the Jupiter Trojans Using Observations, Theoretical Predictions, and Laboratory Simulants
Author(s): Jordana Blacksberg[1], John Eiler[2], Mike Brown[2], Bethany Ehlmann[2, 1], Kevin Hand[1], Robert Hodyss[1], Ahmed Mahjoub[1, 2], Michael Poston[2, 1], Yang Liu[1], Mathieu Choukroun[1], Elizabeth Carey[1], Ian Wong[2]
Institution(s): *[1.] Jet Propulsion Laboratory, Pasadena, CA. [2.] California Institute of Technology, Pasadena, CA.*

414.20 Digital Tracking Observations Discover Asteroids Ten Times Fainter than Conventional Searches
Author(s): Aren Heinze[1], Stanimir Metchev[2, 1]
Institution(s): *[1.] State University of NY, Stony Brook, Stony Brook, NY. [2.] University of Western Ontario, London, ON, Canada.*

416 Venus Posters

Thursday, 4:00 pm - 6:00 pm; Star Circle Pavilion/Arizona Ballroom 6

Chair(s): Constantine Tsang *(Southwest Research Institute)*

416.01 Mars and Venus Ionospheres: Similarities and Differences Related to Solar Wind Interaction
Author(s): Janet Luhmann[1], Yingjuan Ma[2], Karen Alvarez[1], Shannon Curry[1], Demet Ulusen[3], T. E. Cravens[4]
Institution(s): *[1.] SSL, University of California, Berkeley, Berkeley, CA. [2.] IGPP UCLA, Los Angeles, CA. [3.] TUBITAK, Ankara, Turkey. [4.] University of Kansas, Lawrence, KS.*

416.02 Characterization of the lower layer in the dayside Venus ionosphere
Author(s): Zachary Girazian[1], Paul Withers[1], Martin Paetzold[2], Silvia Tellmann[2], Kerstin Peter[2]
Institution(s): *[1.] Boston Univ., Boston, MA. [2.] University of Cologne, Cologne, Germany.*

416.03 A Unique Approach for Studying Venus's Atmosphere: Technology Development for the Venus Atmospheric Maneuverable Platform (VAMP)
Author(s): Rocco Samuele[1], Greg Lee[1], Daniel Sokol[1], Ron Polidan[1], Kristen Griffin[1], Linden Bolisay[2], Yuki Michi[2], Nathan Barnes[2]
Institution(s): *[1.] Northrop Grumman Corporation, Redondo Beach, CA. [2.] L'Garde, Tustin, CA.*

416.04 Observations of Venus at 1-meter wavelength
Author(s): Bryan J. Butler[1]
Institution(s): *[1.] NRAO, Socorro, NM.*

417 Planetary Rings Posters

Thursday, 4:00 pm - 6:00 pm; Star Circle Pavilion/Arizona Ballroom 6

Chair(s): Matthew Tiscareno *(Cornell Univ.)*

417.01 Propellers in Saturn A and B rings
Author(s): Miodrag Sremcevic[1], Glen R. Stewart[1], Nicole Albers[1], Larry W. Esposito[1]
Institution(s): *[1.] Univ. of Colorado, Boulder, Boulder, CO.*

417.02 Incomplete cooling down of Saturn's A ring at solar equinox: Implication for seasonal thermal inertia and internal structure of ring particles
Author(s): Ryuji Morishima[1, 2], Linda Spilker[2], Shawn Brooks[2], Estelle Deau[3, 2], Stu Pilorz[3]
Institution(s): *[1.] University of California - Los Angels, Pasadena, CA. [2.] Jet Propulsion Laboratory, Pasadena, CA. [3.] SETI Institute, Mountain View, CA.*

417.03 Chaotic dynamics outside Saturn's main rings: The case of Atlas
Author(s): Stéfan Renner[1, 2], Nicholas J. Cooper[3], Maryame El Moutamid[4], Mike W. Evans4, Carl D. Murray[3], Bruno Sicardy[5]
Institution(s): *[1.] IMCCE Paris Observatory, Paris, France. [2.] Lille 1 University , Lille, France. [3.] Queen Mary University of London, London, United Kingdom. [4.] Cornell University, Ithaca, NY. [5.] LESIA Paris Observatory, Meudon, France.*

417.05 Towards an Understanding of Thermal Throughput across Saturn's Rings with Cassini CIRS
Author(s): Shawn M. Brooks[1], Linda J. Spilker[1], Stuart H. Pilorz[2], Mark R. Showalter[2]
Institution(s): *[1.] JPL, Pasadena, CA. [2.] SETI, Mountain View, CA.*

417.07 Spoke Formation in Saturn's Ring: The Collisional Cascade Model
Author(s): Douglas P. Hamilton[1]
Institution(s): *[1.] Univ. of Maryland, College Park, MD.*

417.08 Gravitational Accretion of Particles onto Moonlets in Saturn's Rings
Author(s): Keiji Ohtsuki[1], Yuki Yasui[1], Hiroshi Daisaka[2]
Institution(s): *[1.] Kobe University, Kobe, Hyogo, Japan. [2.] Hitotsubashi University, Kunitachi, Tokyo, Japan.*

417.09 Extracting the Radial Profile of Saturn's Phoebe Ring
Author(s): Daniel Tamayo[1, 2], Stephen R. Markham[2], Matthew M. Hedman[3], **Joseph A. Burns[2]**
Institution(s): *[1.] University of Toronto Centre for Planetary Science, Scarborough, ON, Canada. [2.] Cornell University, Ithaca, NY. [3.] University of Idaho, Moscow, ID.*

417.10 Study of the F ring core at high and low resolutions with Cassini ISS
Author(s): Estelle Deau[1, 2]
Institution(s): *[1.] Jet Propulsion Laboratory NASA, Pasadena, CA. [2.] SETI Institute, Mountain View, CA.*

418 Outer Solar System Satellites Posters

Thursday, 4:00 pm - 6:00 pm; Star Circle Pavilion/Arizona Ballroom 6

Chair(s): Jani Radebough *(Brigham Young University)* **&**
Catherine Elder *(University of Arizona)*

418.01 Cassini VIMS Measurements of Thermal Emission from the Tiger Stripes on Enceladus
Author(s): Jay D. Goguen[1], Bonnie J. Buratti[1]
Institution(s): *[1.] JPL, Pasadena, CA.*
Contributing team(s): Cassini VIMS Team

418.02 A Passive Probe for Subsurface Oceans and Liquid Water in Jupiter's Icy Moons
Author(s): Andrew Romero-Wolf[1], Steve Vance[1], Frank Maiwald[1], Paul Ries[1], Kurt Liewer[1]
Institution(s): *[1.] Jet Propulsion Laboratory, Pasadena, CA.*

418.03 The Tidal Perturbations of the Galilean Satellites
Author(s): Robert A. Jacobson[1], William M. Folkner[1]
Institution(s): *[1.] JPL, Pasadena, CA.*

418.04 The influence of variations in Jupiter's plasma environment on the Europa interaction
Author(s): Joseph H. Westlake[1], Anthony Case[2], Xianzhe Jia[3], Justin C. Kasper[3], Krishan Khurana[4], Margaret Kivelson[4, 3], Ralph McNutt[1], Carol Paty[5], Abigail Rymer[1], Joachim Saur[6], James Slavin[3], Howard T. Smith[1], Michael Stevens[2]
Institution(s): *[1.] John Hopkins Applied Physics Lab, Laurel, MD. [2.] Smithsonian Astrophysical Observatory, Harvard, MA. [3.] University of Michigan, Ann Arbor, MI. [4.] University of California Los Angeles, Los Angeles, CA. [5.] Georgia Tech, Atlanta, GA. [6.] University of Cologne, Cologne, Germany.*

418.05 What causes an icy fault to slip? Investigating the depth and frictional conditions for tidally driven Coulomb failure along major strike-slip faults of Europa and Ganymede
Author(s): Marissa E. Cameron[1], Bridget R. Smith-Konter[1], Robert T. Pappalardo[2]
Institution(s): *[1.] Geology and Geophysics, University of Hawaii at Manoa, Honolulu, HI. [2.] Jet Propulsion Laboratory, Pasadena, CA.*

418.06 High spatial and spectral resolution near-infrared mapping of Europa with ESO/VLT/ SINFONI
Author(s): Nicolas Ligier[1], John Carter[1, 2], François Poulet[1], Yves Langevin[1], Christophe Dumas[2], Florian Gourgeot[3, 2]
Institution(s): *[1.] IAS, Orsay, France. [2.] ESO, Santiago, Chile. [3.] Observatorio Nacional COAA, Rio de Janeiro, Brazil.*

418.07 The long-period librations of large synchronous icy moons
Author(s): Marie Yseboodt[1], Tim Van Hoolst[1]
Institution(s): *[1.] Royal Observatory of Belgium, Uccle, Belgium.*

418.08 Mapping the Topography of Europa: The Galileo-Clipper Story
Author(s): Paul M. Schenk[1]
Institution(s): *[1.] Lunar and Planetary Inst., Houston, TX.*

418.09 Reassessing the Crater Distributions on Ganymede and Callisto: Results from Voyager and Galileo, and an Outlook to ESA's JUICE Mission to Jupiter
Author(s): Roland Wagner[1], Nico Schmedemann[2], Gerhard Neukum[2], Stephanie C. Werner[3], Boris A. Ivanov[4], Katrin Stephan[1], Ralf Jaumann[1], Pasquale Palumbo[5]
Institution(s): *[1.] Inst. of Planetary Research, German Aerospace Center (DLR), Berlin, Germany. [2.] Inst. of Geosciences, Freie Universitaet Berlin, Berlin, Germany. [3.] CEED, Univ. of Oslo, Oslo, Norway. [4.] Inst. for Dynamics of Geospheres, Moscow, Russian Federation. [5.] Univ.degli Studi di Napoli Parthenope, Naples, Italy.*

418.10 Thermal conductivity and radiation processing of Mimas and Tethys leading hemisphere anomalies
Author(s): Micah Schaible[1], Robert Johnson[1], Leonid Zhigilei[1], Hayley Williamson[1]
Institution(s): *[1.] Engineering Physics, University of Virginia, Charlottesville, VA.*

418.11 Interplanetary Exchange Of Meteoritic Material: From Europa to the Earth
Author(s): Carmen Ayala-Loera[1], Mauricio Reyes-Ruiz[1], Hector Aceves[1], Carlos Chavez[2]
Institution(s): *[1.] Instituto de Astronomia UNAM, Ensenada, Baja California, Mexico. [2.] UANL, Monterrey, Nuevo Leon, Mexico.*

418.12 Possible astrometric determination of tidal dissipation within Uranus from a future space mission
Author(s): Valery Lainey[1]
Institution(s): *[1.] IMCCE, Paris Observatory, Paris, France.*

418.13 A Timeline of Volcanic Activity on Io in 2013-14 with Near-Infrared Surface Maps
Author(s): Katherine R. de Kleer[1], Imke de Pater[1, 2], Thomas Fitzpatrick[1]
Institution(s): *[1.] UC Berkeley, Berkeley, CA. [2.] SRON Netherlands Institute for Space Research, Utrecht, Netherlands.*

418.14 Amorphous and Crystalline H2O ice at Rhea's Inktomi Crater
Author(s): Emma M. Lewis[1], Cristina M. Dalle Ore[2, 3], Dale P. Cruikshank[2], Oliver L. White[2]
Institution(s): *[1.] Swarthmore College, Swarthmore, PA. [2.] NASA Ames Research Center, Mountain View, CA. [3.] SETI Institute, Mountain View, CA.*

418.15 Large Binocular Telescope Adaptive Optics Mid-infrared Spectroscopy of Thermal Radiation from an Eruption near Io's Gish Bar Patera
Author(s): Michael F. Skrutskie[1], John Wilson[1], Matthew Nelson[1], Philip Hinz[2], Andrew Skemer[2], Jarron Leisenring[2]
Institution(s): *[1.] University of Virginia, Charlottesville, VA. [2.] University of Arizona, Tucson, AZ.*

418.16 Laboratory Infrared Spectroscopy to Identify New Compounds on Icy Moon Surfaces
Author(s): James J. Wray[1], Cindy L. Young[1, 2], Kevin P. Hand[3], Michael J. Poston[3], Robert W. Carlson[3], Roger N. Clark[4], John R. Spencer[5], Donald E. Jennings[6]
Institution(s): *[1.] Georgia Institute of Technology, Atlanta, GA. [2.] Emory University, Atlanta, GA. [3.] Caltech/Jet Propulsion Lab, Pasadena, CA. [4.] Planetary Science Institute, Tucson, AZ. [5.] Southwest Research Institute, Boulder, CO. [6.] NASA Goddard Space Flight Center, Greenbelt, MD.*

418.17 Multi-Wavelength Near Infrared Observations of Marum and Yasur Volcanoes, Vanuatu
Author(s): Robert R. Howell[1], Jani Radebaugh[2], Rosaly M. Lopes[3], Ralph D. Lorenz[4], Elizabeth P. Turtle[4]
Institution(s): *[1.] Univ. of Wyoming, Laramie, WY. [2.] BYU, Provo, UT. [3.] JPL, Pasadena, CA. [4.] JHUAPL, Laurel, MD.*

418.18 High Resolution Imaging of Io's Volcanoes with LBTI
Author(s): Al Conrad[8], Jarron Leisenring[1], Katherine de Kleer[3], Andy Skemer[1], Philip Hinz[1], Michael Skrutskie[2], Christian Veillet[8], Imke de Pater[3], Mario Bertero[4], Patrizia Boccacci[4], Denis Defrère[1], Karl-Heinz Hofmann[5], Andrea La Camera[4], Dieter Schertl[5], John Spencer[6], Gerd Weigelt[5], Charles E. Woodward[7]
Institution(s): *[1.] University of Arizona, Tucson, AZ. [2.] University of Virginia, Charlottesville, VA. [3.] University of California at Berkeley, Berkeley, CA. [4.] University of Genoa, Genova, Italy. [5.] Max Planck Institute for Radio Astronomy, Bonn, Germany. [6.] Southwest Research Institute, Boulder, CO. [7.] University of Minnesota, Minneapolis, MN. [8.] Large Binocular Telescope, Tucson, AZ.*

418.19 Characterization of Callisto's O2 Atmosphere with HST
Author(s): John R. Spencer[1], Nathaniel J. Cunningham[2], Paul D. Feldman[3], Darrell F. Strobel[3]
Institution(s): *[1.] Southwest Research Institute, Boulder, CO. [2.] Nebraska Wesleyan University, Lincoln, NE. [3.] Johns Hopkins University, Baltimore, MD.*

418.20 Astrometry of natural satellites: improving the dynamics of Mars, Jupiter and Saturn with old observations
Author(s): Vincent Robert[1, 2], Dan Pascu[3], Valéry Lainey[2], Jean-Eudes Arlot[2]
Institution(s): *[1.] IPSA, Ivry-sur-Seine, IDF, France. [2.] IMCCE, Paris, IDF, France. [3.] USNO, Washington D.C., DC.*

418.21 Spectral Properties of Tethys and Mimas
Author(s): Katrin Stephan[1], Ralf Jaumann[1, 2], Roland Wagner[1], Roger N. Clark[3], Dale P. Cruikshank[4], Cristina Dalle Ore[4], Robert H. Brown[5], Bernd Giese[1], Thomas Roatsch[1], Dennis Matson[6], Kevin H. Baines[7], Gianrico Filacchione[8], Fabrizio Capaccioni[8], Sebastian Rodriguez[9], Bonnie J. Buratti[6], Phil D. Nicholson[10], Norbert Krupp[11]
Institution(s): *[1.] DLR, Berlin, Germany. [2.] FU, Berlin, Germany. [3.] U.S.G.S., Denver, CO. [4.] NASA Ames, Moffett Field, CA. [5.] UoA, Tucson, AZ. [6.] JPL, Pasadena, CA. [7.] SSEC, Madison, WI. [8.] INAF-IASF, Rome, Italy. [9.] Univ. of Paris, Paris, France. [10.] Cornell Univ., Ithaca, NY. [11.] MPS, Goettingen, Germany.*

418.22 Effect of Microstructure on Spontaneous Polarization in Amorphous Solid Water (ASW) Films C. Bu[a], J. Shi[b] and R. A. Baragiola[a] [a]University of Virginia, Charlottesville, VA 22904 [b]Syracuse University, Syracuse, NY 13244
Author(s): Caixia Bu[1], Jianming Shi[2], Raul A. Baragiola[1]
Institution(s): *[1.] Physics, University Of Virginia, Charlottesville, VA. [2.] Syracuse University, Syracuse, NY.*

419 Pluto Posters

Thursday, 4:00 pm - 6:00 pm; Star Circle Pavilion/Arizona Ballroom 6

Chair(s): Henry Throop *(PSI)*

419.01 Coordinated Occultation Observations for Pluto, Nix, and Quaoar in July 2014
Author(s): Jay M. Pasachoff[1, 2], Adam R. Schiff[1, 3], Christina H. Seeger[1], Bryce A. Babcock[1], Michael J. Person[4], Amanda A. S. Gulbis[5, 4], Amanda S. Bosh[4], Carlos A. Zuluaga[4], Stephen E. Levine[6], David J. Osip[7], Patricio Rojo[8], Molly Kosiarek[4]
Institution(s): *[1.] Williams College, Williamstown, MA. [2.] Caltech, Pasadena, CA. [3.] Middlebury College, Middlebury, VT. [4.] MIT, Cambridge, MA. [5.] SAAO, Cape Town, South Africa. [6.] Lowell Obs., Flagstaff, AZ. [7.] OCIW, La Serena, Chile. [8.] U. Chile, Santiago, Chile.*

419.02 Predicted Atmospheric Temperature Retrievals for the New Horizons Encounter with Pluto.
Author(s): Angela M. Zalucha[1]
Institution(s): *[1.] SETI Institute , Boulder, CO.*

419.03 Highly fractionated mass loss from the atmosphere of Pluto
Author(s): CHIEN-CHANG YEN[1, 2], Ronald E. Taam [2, 3], Mao-Chang Liang[4, 5]
Institution(s): *[1.] Fu Jen Catholic University, Department of Mathematics, New Taipei City, Taiwan. [2.] Academia Sinica, Institute of Astronomy and Astrophysics, Taipei, Taiwan. [3.] Northwestern University, Department of Physics and Astronomy, Evanston, IL. [4.] Academia Sinica, Research Center for Environmental Changes, Taipei, Taiwan. [5.] U. Houston, Houston, TX.*

419.04 Spectroscopy of Pluto at six longitudes, 380-930 nm
Author(s): Dale P. Cruikshank[1], Noemi Pinilla-Alonso[2], Vania Lorenzi[3], Will M. Grundy[4], Javier Licandro[5], Richard P. Binzel[6]
Institution(s): *[1.] NASA Ames Research Center, Moffett Field, CA. [2.] Univ. Tennessee Knoxville, Knoxville, TN. [3.] Fundación Galileo Galilei-INAF, Brena Baja, Spain. [4.] Lowell Observatory, Flagstaff, AZ. [5.] Instituto de Astrofísica de Canarias, La Laguna, Tenerife, Spain. [6.] MIT, Cambridge, MA.*

419.05 Resolved photometry and a solar phase curve for Pluto and Charon from New Horizons LORRI.
Author(s): Amanda M. Zangari[1], S. A. Stern[1], Harold A. Weaver[2], Leslie A. Young[1], Kimberly Ennico[3], Catherine B. Olkin[1], Jeffrey M. Moore[3], Richard P. Binzel[4], Marc W. Buie[1], Bonnie J. Buratti[5], Andrew F. Cheng[2], Ivan R. Linscott[6], William B. McKinnon[7], Harold J. Reitsema[8], Paul Schenk[9], Mark R. Showalter[10], John R. Spencer[1], G. L. Tyler[11], Veronica J. Bray[12], Thomas W. Momary[5], Francis Nimmo[13], Kelsi N. Singer[1]
Institution(s): *[1.] SwRI, Boulder, CO. [2.] JHU/APL, Laurel, MD. [3.] NASA Ames, Moffet Field, CA, CA. [4.] MIT, Cambridge, MA. [5.] JPL-Caltech, Pasadena, CA. [6.] Stanford University, Stanford, CA. [7.] Washington University, St. Louis, MO. [8.] Ball Aerospace (Retired), Boulder, CO. [9.] LPI, Houston, TX. [10.] SETI Institute, Montain View, CA. [11.] Stanford University (Emeritus), Stanford, CA. [12.] Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ. [13.] University of California, Santa Cruz, Santa Cruz, CA.*

419.06 What the Surfaces of Pluto and Charon Can Teach Us about Their Orbital and Interior Evolution
Author(s): Terry Hurford[1], Alyssa Rhoden[2, 1], Wade Henning[1]
Institution(s): *[1.] NASA GSFC, Greenbelt, MD. [2.] JHU-APL, Laurel, MD.*

419.07 The Internal Structures of Pluto and Charon, and Can New Horizons Tell?
Author(s): William B. McKinnon[1], Kelsi N. Singer[1, 2]
Institution(s): *[1.] Washington Univ., Saint Louis, MO. [2.] SwRI, Boulder, CO.*
Contributing team(s): New Horizons Science Team

419.08 Upper limit on dust in the Pluto system
Author(s): Stephen Levine[1, 2], A. S. Bosh[2, 1], M. J. Person[2], D. J. Osip[3], C. Zuluaga[2], P. Rojo[4], M. Kosiarek[2], T. Thanathibodee[2], E. Kulchoakrungsun[2]
Institution(s): *[1.] Lowell Observatory, Flagstaff, AZ. [2.] MIT, Cambridge, MA. [3.] OCIW, La Serena, Chile. [4.] Universidad de Chile, Santiago, Chile.*

419.09 Atmospheric state of Pluto from the 31 July 2014 stellar occultation
Author(s): Michael J. Person[1], Amanda S. Bosh[1, 2], Carlos A. Zuluaga[1], Molly Kosiarek[1], David J. Osip[3], Stephen E. Levine[2, 1], Jay M. Pasachoff[4, 5], Adam R. Schiff[5, 6], Christina H. Seegar[4], Bryce A. Babcock[4], Amanda A. Gulbis[7, 1], Patricio Rojo[8]
Institution(s): *[1.] MIT, Cambridge, MA. [2.] Lowell Obs., Flagstaff, AZ. [3.] OCIW, La Serena, Chile. [4.] Williams College, Williamstown, MA. [5.] California Institute of Technology, Pasadena, CA. [6.] Middlebury College, Middlebury, VT. [7.] SAAO, Cape Town, South Africa. [8.] U. Chile, Santiago, Chile.*

419.10 Possible formation of organic aerosol formation in Pluto's atmosphere
Author(s): Hiroshi Imanaka[2, 1], Dale P. Cruikshank[2], Christopher K. Materese[2], Christopher P. McKay[2], Mark A. Smith[3]
Institution(s): *[1.] University of Arizona, Tucson, AZ. [2.] NASA Ames Research Center, Moffett Field, CA. [3.] University of Houston, Houston, TX.*

420 Origins of Planetary Posters

Thursday, 4:00 pm - 6:00 pm; Star Circle Pavilion/Arizona Ballroom 6

Chair(s): Julien Salmon *(Southwest Research Institute)*

420.01 Stop hitting yourself: did most terrestrial impactors originate from the terrestrial planets?
Author(s): Alan Jackson[1], Erik Asphaug[1], Linda Elkins-Tanton[1]
Institution(s): *[1.] School of Earth and Space Exploration, Arizona State University, Tempe, AZ.*

420.02 Growth of Planetary Embryos During the Oligarchic Growth Stage
Author(s): Jennifer Larson[1], Andrew Hesselbrock[1], David Minton[1]
Institution(s): *[1.] Purdue University, West Lafayette, IN.*

420.03 Experimental studies of low-velocity collisions in protoplanetary disks and planetary rings
Author(s): Adrienne Dove[1], Joshua Colwell[1], Nico Brown[1]
Institution(s): *[1.] University of Central Florida, Orlando, FL.*

420.04 Planetesimal-driven migration of the outer planets in presence of a self-gravitating planetesimal disk.
Author(s): Mauricio Reyes-Ruiz[1], Hector Aceves[1], Carlos E. Chavez[2]
Institution(s): *[1.] Instituto de Astronomia, UNAM, Ensenada, Baja California, Mexico. [2.] FIME, UANL, Monterrey, Nuevo Leon, Mexico.*

420.05 Solar nebula constraints derived from the masses and formation times of Earth, Mars, Jupiter and Saturn
Author(s): Ignacio Mosqueira[1], Ryan Lichtig[1]
Institution(s): *[1.] San Jose State University, San Jose, CA.*

420.06 Planet Formation in Stellar Binaries: How Disk Gravity Can Lower the Fragmentation Barrier
Author(s): Kedron Silsbee[1], Roman R. Rafikov[1]
Institution(s): *[1.] Princeton, Princeton, NJ.*

421 TNOs and Centaurs Posters

Thursday, 4:00 pm - 6:00 pm; Star Circle Pavilion/Arizona Ballroom 6

Chair(s): Mike Alexandersen *(University of British Columbia)* **&**
Audrey Thirouin *(Lowell Observatory)*

421.01 The IMACS Occultation Survey: I. Pilot Study
Author(s): Matthew J. Holman[1], Matthew J. Payne[1], Charles Alcock[1], Hilke Schlichting[2], David Osip[3], Federica Bianco[4], Brian McLeod[1], Ruth Murray-Clay[1], Paul Nulsen[1], Pavlos Protopapas[1], Ian Thompson[3], Greg Burley[3], Christoph Birk[3]
Institution(s): *[1.] Harvard-Smithsonian, CfA, Cambridge, MA. [2.] MIT, Cambridge, MA. [3.] Carnegie Observatories, Pasadena, CA. [4.] New York University, New York, NM.*

421.02 The IMACS Occultation Survey: II. An Extended Campaign
Author(s): Matthew J. Payne[1], Matthew J. Holman[1], Charles Alcock[1], Dave Osip[3], Hilke Schlichting[2], Federica Bianco[4], Brian Mcleod[1], Ruth Murray-Clay[1], Paul Nulsen[1], Ian Thompson[3]
Institution(s): *[1.] Center for Astrophysics, Harvard-Smithsonian, Cambridge, MA. [2.] MIT, Cambridge, MA. [3.] Carnegie, Pasadena, CA. [4.] NYU, NY, NY.*

421.03 The Whipple Mission: Exploring the Kuiper Belt and the Oort Cloud
Author(s): Charles Alcock[1], Michael Brown[2], Tom Gauron[1], Cate Heneghan[2], Matthew Holman[1], Almus Kenter[1], Ralph Kraft[1], John Livingston[2], Stephen Murray[3], Ruth Murray-Clay[1], Paul Nulsen[1], Matthew Payne[1], Hilke Schlichting[4], Amy Trangsrud[2], Jan Vrtilek[1], Michael Werner[2]
Institution(s): *[1.] Harvard-Smithsonian, CfA, Cambridge, MA. [2.] California Institute of Technology Jet Propulsion Laboratory, Pasadena, CA. [3.] Johns Hopkins University, Baltimore, MD. [4.] Massachusetts Institute of Technology, Cambridge, MA.*

421.04 Thermal and Electron Irradiation Processing of Outer Solar System Ice Simulants: Chemical and Spectroscopic Laboratory Characterization
Author(s): Michael Poston[1], Ahmed Mahjoub[1], Kevin Hand[1], Robert Carlson[1], Mike Brown[1], Jordana Blacksberg[1], John Eiler[1], Robert Hodyss[1], Elizabeth Carey[1], Bethany Ehlmann[1]
Institution(s): *[1.] Caltech/JPL, Pasadena, CA.*

421.05 Probing the transneptunian disk with MIOSOTYS
Author(s): Alain Doressoundiram[1], Françoise Roques[1], Chih-Yuan Liu[1, 2], Lucie Maquet[1]
Institution(s): *[1.] Observatoire de Paris, Meudon, France. [2.] Tsing Hua University, Hsinchu, Taiwan.*

421.06 Refining the Search for Suitable KBOs: Calibration of the HST/ACS Wide Field Camera Ramp Filters.
Author(s): Laurence M. Trafton[1]
Institution(s): *[1.] Univ. of Texas, Austin, TX.*

421.07 Centaur size distribution with DECam
Author(s): Cesar Fuentes[1, 2], David E. Trilling[3], Hilke Schlichting[4]
Institution(s): *[1.] Universidad de Chile, Santiago, Chile. [2.] CTIO, La Serena, Chile. [3.] Northern Arizona University, Flagstaff, AZ. [4.] MIT, Cambridge, MA.*

421.08 Infrared Observations of Minor Planets in the Outer Solar System
Author(s): Ryan Blackman[1, 2], David Trilling[2], Michael Mommert[2], Brian Burt[3], Eric MacLennan[4]
Institution(s): *[1.] Yale University, New Haven, CT. [2.] Northern Arizona University, Flagstaff, AZ. [3.] Massachusetts Institute of Technology, Cambridge, MA. [4.] University of Tennessee at Knoxville, Knoxville, TN.*

421.09 Rotational properties of the binary and non-binary populations in the Trans-Neptunian belt
Author(s): Audrey Thirouin[1, 2], Keith S. Noll[3], Jose Luis Ortiz Moreno[1], Nicolas Morales [1]
Institution(s): *[1.] Instituto de Astrofisica de Andalucia , Granada, Spain. [2.] Lowell Observatory, Flagstaff, AZ. [3.] NASA Goddard Space Flight Center, Greenbelt, MD.*

421.10 Status of the Transneptunian Automated Occultation Survey (TAOS II)
Author(s): Mauricio Reyes-Ruiz[1]
Institution(s): *[1.] Instituto de Astronomia, UNAM, Ensenada, Baja California, Mexico.*
Contributing team(s): TAOS II team

422 Jovian Planets Posters

Thursday, 4:00 pm - 6:00 pm; Star Circle Pavilion/Arizona Ballroom 6

Chair(s): Adam Showman *(Univ. of Arizona)*

422.01 Precision Pointing Reconstruction and Geometric Metadata Generation for Cassini Images
Author(s): Robert S. French[1], Mark R. Showalter[1], Mitchell K. Gordon[1]
Institution(s): *1. SETI Institute, Mountain View, CA.*

422.02 Jupiter's polar auroral dynamics
Author(s): Denis Grodent[1], Bertrand Bonfond[1]
Institution(s): *[1.] Astrophysique Géophysique et Océanographie, Université de Liège, Liège, Belgium.*
Contributing team(s): Laboratoire de Physique Atmosphérique et Planétaire

422.03 Search for Satellite Effects on Saturn's Auroras in Cassini UVIS Data
Author(s): Wayne R. Pryor[1], Larry Esposito[2], Alain Jouchoux[2], Denis Grodent[3], Jacques Gustin[3], Aikaterini Radioti[3]
Institution(s): *[1.] Central Arizona College, Coolidge, AZ. [2.] LASP/University of Colorado, Boulder, CO. [3.] University of Liege, Liege, Belgium.*
Contributing team(s): Cassini UVIS Team

422.04 Jupiter's Great Red Spot and Ammonium Hydrosulfide
Author(s): Reggie L. Hudson[1], Mark J. Loeffler[1], Nancy J. Chanover [2], Amy A. Simon[1]
Institution(s): *[1.] NASA Goddard Space Flight Center, Greenbelt, MD. [2.] New Mexico State University, Department of Astronomy, Las Cruces, NM.*

422.05 New evidence for chemical depletion of ammonia in the 1 to 2 bar region of Jupiter's atmosphere
Author(s): Michael H. Wong[1], Sushil K. Atreya[2], Paul N. Romani[3], Imke de Pater[1], William R. Kuhn[2], Konstantinos S. Kalogerakis[4]
Institution(s): *[1.] University of California, Berkeley, CA. [2.] University of Michigan, Ann Arbor, MI. [3.] NASA Goddard Space Flight Center, Greenbelt , MD. [4.] SRI International, Menlo Park, CA.*

422.06 Tracking Jupiter's Quasi-Quadrennial Oscillation and Mid-Latitude Zonal Waves: Initial Results
Author(s): Thomas K. Greathouse[1], Glenn S. Orton[2], Raul Morales-Juberias[3], Leigh N. Fletcher[4], Curtis N. DeWitt[5], Rick Cosentino[3], Matthew J. Richter[5], John H. Lacy[6]
Institution(s): *[1.] Southwest Research Institute, San Antonio, TX. [2.] Jet Propulsion Laboratory, Pasadena, CA. [3.] New Mexico Tech, Socorro, NM. [4.] University of Oxford, Oxford, United Kingdom. [5.] Univeristy of California Davis, Davis, CA. [6.] Univeristy of Texas at Austin, Austin, TX.*

422.07 Numerical modeling of planetary-scale waves on Jupiter
Author(s): Richard Cosentino[1], Raul Morales-Juberias[1], Amy Simon[2]
Institution(s): *[1.] Physics, New Mexico Institute of Mining and Technology, Socorro, NM. [2.] NASA Goddard, Greenbelt, MD.*

422.08 Moment of inertia of Jupiter from the measurement of its spin-pole precession rate using Juno's radio-science data
Author(s): Sebastien Le Maistre[1], William M. Folkner[1], Robert A. Jacobson[1]
Institution(s): *[1.] Jet Propulsion Laboratory, Pasadena, CA.*

422.09 Some Properties of Saturn'ian Equatorialand Temperate Belts at the 2009 Equinox
Author(s): Victor G. Tejfel[1], Alibek M. Karimov[1], Galina A. Kharitonova[1]
Institution(s): *[1.] Fessenkov Astrophysical Institute, Almaty, Alberta, Kazakhstan.*

422.10 Metric Observations of Saturn with the Giant Meterwave Radio Telescope
Author(s): Regis D. Courtin[1], Mamta Pandey-Pommier[2], Daniel Gautier[1], Philippe Zarka[1], Mark D. Hofstadter[3]
Institution(s): *[1.] LESIA, Observatoire de Paris, Meudon, France. [2.] CRAL, Observatoire de Lyon, Saint Genis Laval , France. [3.] Jet Propulsion Laboratory, Pasadena, CA.*

422.11 The Anticyclonic Eye of the Storm: Evolution of Saturn's Great Storm Region and Associated Anticyclone as seen by Cassini/VIMS
Author(s): Thomas W. Momary[1], Kevin H. Baines[2]
Institution(s): *[1.] JPL, Pasadena, CA. [2.] SSEC/University of Wisconsin-Madison, Madison, WI.*
Contributing team(s): Cassini/VIMS Science Team

422.12 Long-Term Variability of Saturn's Clouds at 5.1-5.2 micron
Author(s): Padma A. Yanamandra-Fisher[1], Glenn S. Orton[2], Mary K. Wakefield[3], Ivan Aguilar[4], Thomas W. Momary[2], Leigh N. Fletcher[5]
Institution(s): *[1.] Space Science Institute, Rancho Cucamonga, CA. [2.] CIT/Jet Propulsion Laboratory, Pasadena, CA. [3.] California State University San Marcos, San Marcos, CA. [4.] University of California, Berkeley, CA. [5.] University of Oxford, Oxford, United Kingdom.*

422.13 Discrete Clouds on Uranus and Neptune: Investigating Formation Mechanisms
Author(s): Michael Roman[1], Don Banfield[1], Peter Gierasch[1]
Institution(s): *[1.] Cornell Univesity, Ithaca, NY.*

422.14 Investigating the Increasing Inventory of Observed Clouds and Dark Spots on Uranus and Neptune through Computational Simulation
Author(s): Raymond P. Le Beau[1], Csaba Palotai[2], Maja Mijic[1]
Institution(s): *[1.] Saint Louis University, Saint Louis, MO. [2.] University of Central Florida, Orlando, FL.*

422.15 Thermal Evolution of the Inhomogeneous Jovian Planets: The Effects of Helium Phase Separation
Author(s): Christopher Mankovich[1], Jonathan Fortney[1], Kevin Moore[1], Nadine Nettelmann[1]
Institution(s): *[1.] University of California Santa Cruz, Santa Cruz, CA.*

422.16 Direct Wind Measurements in Io's Atmosphere
Author(s): Michelle Nowling[1, 2], Arielle Moullet[2]
Institution(s): *[1.] Physics, University of Houston, Houston, TX. [2.] National Radio Astronomy Observatory , Charlottesville, VA.*

422.17 Photochemistry in Saturn's Ring-Shadowed Atmosphere: Modeling of Key Molecules and Observations of Dust Content
Author(s): Scott G. Edgington[1], Sushil K. Atreya[2], Eric H. Wilson[2, 3], Robert A. West[1], Kevin H. Baines[1, 4], Gordon L. Bjoraker[5], Leigh N. Fletcher[6], Tom Momary[1]
Institution(s): *[1.] Jet Propulsion Laboratory, Pasadena, CA. [2.] University of Michigan, Ann Arbor, MI. [3.] Space Environment Technologies, Los Angeles, CA. [4.] University of Wisconsin, Madison, WI. [5.] NASA Goddard Space Flight Center, Greenbelt, MD. [6.] University of Oxford, Oxford, United Kingdom.*

422.18 Modeling Neptune's Upper Troposphere and Stratosphere from Keck Spectra
Author(s): Statia H. Luszcz-Cook[1], Katherine de Kleer[2], Imke de Pater[2], Máté Ádámkovics[2], Heidi B. Hammel[3]
Institution(s): *[1.] American Museum of Natural History, New York, NY. [2.] University of California, Berkeley, Berkeley, CA. [3.] AURA, Washington, DC.*

422.19 Optical and Near-IR Spectral Comparison with Chromophore Candidates in the Jovian Atmosphere
Author(s): Alexander Thelen[1], Nancy Chanover[1], Charles Miller[1], Mark Loeffler[2], Reggie Hudson[2], Amy Simon[2]
Institution(s): *[1.] New Mexico State University, Las Cruces, NM. [2.] Goddard Space Flight Center, Greenbelt, MD.*

422.20 Computation of Concentric Shell Particle Scattering Effects in Jovian Clouds
Author(s): Patrick M. Fry[1], Lawrence A. Sromovsky[1]
Institution(s): *1. Univ. of Wisconsin, Madison, WI.*

422.21 The Chemistry of Ethene in the Storm Beacon Region on Saturn
Author(s): Eleanor S. Armstrong[1], Julianne I. Moses[2], Leigh N. Fletcher[1], Patrick G. Irwin[1], Brigette E. Hesman[3], Paul N. Romani [4]
Institution(s): *[1.] University of Oxford, Oxford, United Kingdom. [2.] Space Science Institute, Boulder, CO. [3.] University of Maryland, College Park , MD. [4.] NASA Goddard Space Flight Center, Greenbelt, MD.*

422.22 Numerical Modeling of Saturn's Northern Hexagon as a Meandering Shallow Jet
Author(s): Raul Morales-Juberias[1], Kunio M. Sayanagi[2], Richard E. Cosentino[1], Amy A. Simon[3]
Institution(s): *[1.] New Mexico Tech, Socorro, NM. [2.] Hampton University, Hampton, VA. [3.] NASA GSFC, Greenbelt , MD.*

422.23 JunoCam: Outreach and Science Opportunities
Author(s): Candice Hansen[1], Andy Ingersoll[2], Mike Caplinger[3], Mike Ravine[3], Glenn Orton[4]
Institution(s): *[1.] PSI, Ivins, UT. [2.] Calif Inst. of Technology, Pasadena, CA. [3.] Malin Space Science Systems, San Diego, CA. [4.] Jet Propulsion Lab / CIT, Pasadena, CA.*

422.24 Wave-Driven Compositional Effects in the Upper Atmospheres of Giant Planets
Author(s): Katia Matcheva[1]
Institution(s): *[1.] University of Florida, Gainesville, FL.*

422.25 A Study of Cyclones and Anti-Cyclones in Jupiter's North Tropical Zone, 2003-2013
Author(s): Bryan E. Penprase[1], Franklin M. Marsh[1]
Institution(s): *[1.] Pomona College, Claremont, CA.*

422.26 Numerical Simulations of Jupiter's Moist Convection Layer: Structure and Dynamics in Statistically Steady States
Author(s): Kensuke Nakajima[1], Ko-ichiro Sugiyama[2], Masatsugu Odaka[3], Kiyoshi Kuramoto[3], Yoshi-Yuki Hayashi[4, 5]
Institution(s): *[1.] Kyushu Univ. Dept. Earth and Planetary Sci., Fukuoka, Fukuoka, Japan, Japan. [2.] ISAS/JAXA, Sagamihara, Kanagawa, Japan, Japan. [3.] Dept. Earth and Planetary Sci, Hokkaido Univ., Sapporo, Hokkaido, Japan, Japan. [4.] Dept. Earth and Planetary Sci., Kobe Univ., Kobe, Hyogo, Japan, Japan. [5.] Center for Planetary Sciences, Kobe, Hyogo, Japan, Japan.*

422.27 Numerical Simulations of Saturn's Polar Cyclones
Author(s): Shawn R. Brueshaber[1], Kunio M. Sayanagi[2]
Institution(s): *[1.] Mechanical and Aerospace Engineering, Western Michigan University, Kalamazoo, MI. [2.] Hampton University, Hampton, VA.*

Sagan Lecture Public Talk: Discarded Worlds: Astronomical Ideas That Were Almost Correct…, Guy Consolmagno (Specola Vaticana)

Thursday, 7:00 pm - 8:00 pm; Centennial Hall - University of Arizona

Astronomy is more than just observing; it's making sense of those observations. A good theorist needs a good imagination... and no fear of being wrong. Ptolemy in ancient Rome, the medieval bishops Oresme and Cusa, the 19th century astronomers Schiaparelli and Pickering, all rose to the challenge; and they were all almost correct. Which is to say, they were wrong... sometimes hilariously, sometimes heartbreakingly so. What lessons can 21st century astronomers take from these discarded worlds?

500 Asteroid Physical Characterization 2: Vesta and Ceres

Friday, 8:30 am - 10:00 am; Tucson Ballroom E/F

Chair(s): Julie Castillo-Rogez *(JPL/CalTech)* **&**
Lucille Le Corre *(Planetary Science Institute)*

500.01 Eight is enough: Identification of additional Vestoids via NIR spectral and mineralogical characterization
Author(s): Paul S. Hardersen[1], Vishnu Reddy[2], Rachel Roberts[1], Amy Mainzer[3]
Institution(s): *[1.] Univ. of North Dakota, Grand Forks, ND. [2.] Planetary Science Institute, Tucson, AZ. [3.] Jet Propulsion Laboratory, Pasadena, CA.*

500.02 Modal mineralogy of Vesta
Author(s): Francois Poulet[1], Yves Langevin[1], Ottaviano Ruesch[2], Harald Hiesinger[2]
Institution(s): *[1.] Institut d'Astrophysique Spatiale, Orsay Cedex, France. [2.] Institut für Planetologie, Münster, Germany.*

500.03 Vesta Is Not an Intact Protoplanet
Author(s): Guy Consolmagno[1], Diego Turrini[2], Gregor Golabeck[3], Martin Jutzi[4], Sin-iti Sirono[5], Vladimir Svetsov[6], Kleomenis Tsiganis[7]
Institution(s): *[1.] Specola Vaticana, Vatican City, Holy See (Vatican City State). [2.] Istituto di Astrofisica e Planetologia Spaziali INAF-IAPS, Rome, Italy. [3.] Institute of Geophysics, ETH Zurich, Zurich, Switzerland. [4.] Physics Institute, Space Research and Planetary Sciences, Center for Space and Habitability, University of Bern, Bern, Switzerland. [5.] Earth and Environmental Sciences, Nagoya University, Nagoya, Japan. [6.] Institute for Dynamics of Geospheres, Moscow, Russian Federation. [7.] Department of Physics, Aristotle University of Thessaloniki, Thessaloniki, Greece.*

500.04 A Rough Surface Model to Explain Surface Temperatures on Vesta
Author(s): Eric Palmer[1], Mark V. Sykes[1]
Institution(s): *[1.] Planetary Science Institute, Tucson, AZ.*

500.05 A Brief History of Ceres
Author(s): Julie Castillo-Rogez[1], Marc Neveu[3], Steven Desch[3], Thomas Prettymam[2]
Institution(s): *[1.] JPL/CalTech, Pasadena, CA. [2.] Planetary Science Institute, Tucson, AZ. [3.] Arisona State University, Phoenix, AZ.*

500.06 The Case of the Missing Ceres Family
Author(s): Andrew S. Rivkin[1], Erik Asphaug[2], William F. Bottke[3]
Institution(s): *[1.] JHU/APL, Laurel, MD. [2.] Arizona State University, Tempe, AZ. [3.] SwRI, Boulder, CO.*

500.07 The potential of continuum slopes in the near-IR spectrum for the analysis of the surface of Ceres
Author(s): Derek Sears[1]
Institution(s): *[1.] Planetary Sciences, NASA Ames research Center/BAERI, Mountain View, CA.*

500.08 Core Cracking and Hydrothermal Circulation Profoundly Affect Ceres' Geophysical Evolution
Author(s): Marc Neveu[1], Steven J. Desch[1], Julie C. Castillo-Rogez[2]
Institution(s): *[1.] School of Earth & Space Exploration, Arizona State University, Tempe, AZ. [2.] Jet Propulsion Laboratory, Pasadena, CA.*

500.09 An Icy Regolith Model that Predicts the Estimated Source Flux of H2O on Ceres
Author(s): Stephen E. Wood[1], Dylan S. Reynolds[1], Jonathan Bapst[1], Joshua Mehlhaff[1], Stephen G. Griffiths[2]
Institution(s): *[1.] Univ. of Washington, Seattle, WA. [2.] University of Leeds, Leeds, United Kingdom.*

501 Origins of Planetary Systems 2

Friday, 8:30 am - 10:00 am; Arizona Ballroom 7

Chair(s): Kevin Walsh *(Southwest Research Institute)* **&**
Andrew Youdin *(University of Arizona)*

501.01 The Dispersal of Protoplanetary Disks - Impact on Planetary Architectures
Author(s): Ilaria Pascucci[1]
Institution(s): *[1.] LPL/University of Arizona, Tucson, AZ.*

501.02 Primordial Excitation Of Spin-Orbit Misalignments Through Gravitational And Magnetic Star-Disk Interactions
Author(s): Christopher Spalding[1], Konstantin Batygin[1]
Institution(s): *[1.] Geological and Planetary Science, California Institute of Technology, Pasadena, CA.*

501.03D Angular Momentum Transport in Circumplanetary Disks
Author(s): Tyler R. Mitchell[1]
Institution(s): *[1.] Humboldt State University, Arcata, CA.*

501.04 Detailed opacity model of viscously evolved protoplanetary disks: trapping planetary cores.
Author(s): Kevin Baillie[1], Sébastien Charnoz[1]
Institution(s): *[1.] Université Paris Diderot / CEA, Paris, France.*

501.05 Hydrodynamic Stability Criteria for Vertically Stratified Protoplanetary Disks
Author(s): Glen R. Stewart[1]
Institution(s): *[1.] Univ. of Colorado, Boulder, CO.*

501.06 Terrestrial Planet Formation in the Presence of Migrating Super-Earths
Author(s): André Izidoro[1, 2], Alessandro Morbidelli[1], Sean N. Raymond[3, 4]
Institution(s): *[1.] Observatoire de la Cote d'Azur, Nice, France. [2.] CAPES Foundation, Brasilia, Distrito Federal, Brazil. [3.] Laboratoire d'Astrophysique de Bordeaux - CNRS, Bordeaux, France. [4.] Universite de Bordeaux, Bordeaux, France.*

501.07 Co-Accretion of Jupiter's Core and Gaseous Envelope
Author(s): Stuart Weidenschilling[1], Gennaro D'Angelo[2], Jack J. Lissauer[2], Peter Bodenheimer[3]
Institution(s): *[1.] Planetary Science Inst., Tucson, AZ. [2.] NASA ARC, Moffett Field, CA. [3.] UCO/Lick Observatory, Santa Cruz, CA.*

501.08 Forming Inner Ice-Rich Moons at Saturn from a Massive Early Ring
Author(s): Julien Salmon[1], Robin M. Canup[1]
Institution(s): *[1.] Southwest Research Institute, Boulder, CO.*

501.09 On an impact origin of Phobos-Deimos
Author(s): Robin M. Canup[1], Julien Salmon[1]
Institution(s): *[1.] Southwest Research Inst., Boulder, CO.*

502 Icy Satellites Potpourri

Friday, 8:30 am - 10:00 am; Arizona Ballroom 11/ 12

Chair(s): Matthew Tiscareno *(Cornell Univ.)* **&**
James Wray *(Georgia Institute of Technology)*

502.01 Distribution of CO2 ice and evidence for near-surface layers on the large Uranian satellites
Author(s): Richard J. Cartwright[1], Joshua P. Emery[1], Noemi Pinilla-Alonso[1], Andy S. Rivkin[2], David E. Trilling[3]
Institution(s): *[1.] Earth and Planetary Sciences, University of Tennessee, Knoxville, TN. [2.] Johns Hopkins University Applied Physics Laboratory, Laurel, MD. [3.] Northern Arizona University, Flagstaff, AZ.*

502.02 Temperature maps of Saturn's satellites retrieved from Cassini-VIMS observations
Author(s): Gianrico Filacchione[1], Fabrizio Capaccioni[1], Mauro Ciarniello[1], Federico Tosi[1], Emiliano D'Aversa[1], Roger N. Clark[2], Robert N. Brown[3], Bonnie J. Buratti[4], Dale P. Cruikshank[5], Cristina M. Dalle Ore[5], Francesca Scipioni[6], Priscilla Cerroni[1]
Institution(s): *[1.] INAF-IAPS, Rome, Italy. [2.] Planetary Science Institute, Tucson, AZ. [3.] LPL-UA, Tucson, AZ. [4.] NASA-JPL, Pasadena, CA. [5.] NASA-AMES, Moffett Field, CA. [6.] LPI, Houston, TX.*

502.03 Spectroscopic Variation of Water Ice Abundance Across Mimas and Tethys' Surface
Author(s): Francesca Scipioni[1], Paul Schenk[1]
Institution(s): *[1.] USRA, Houston, TX.*

502.04D Transport of Ice on the Surface of Iapetus
Author(s): Götz G. Galuba[1]
Institution(s): *[1.] Freie Universität Berlin, Berlin, Berlin, Germany.*

502.05 Modeling of Sublimation-Driven Erosion and Ice Pinnacle Formation on Callisto
Author(s): Oliver White[1], Orkan M. Umurhan[1], Alan D. Howard[2], Jeffrey M. Moore[1]
Institution(s): *[1.] NASA Ames Research Center, Moffett Field, CA. [2.] University of Virginia, Charlottesville, VA.*

502.06 Space Weathering on Icy Satellites in the Outer Solar System
Author(s): Roger N. Clark[1], Zachary Perlman[2], Neil Pearson[3], Dale P. Cruikshank[4]
Institution(s): *[1.] Planetary Science Institute, Tucson, AZ. [2.] Perlman Inc., Davie, FL. [3.] U. Nevada, Reno, NV. [4.] NASA Ames Research Center, Moffett Field, CA.*

502.07 Time-varying Geometric Orbital Elements of Saturn's Moons
Author(s): Matthew S. Tiscareno[1]
Institution(s): *[1.] Cornell Univ., Ithaca, NY.*

502.08 Spectrophotometric Properties of Thermally Anomalous Terrain on Mimas
Author(s): Anne J. Verbiscer[1], Paul Helfenstein[2], Carly Howett[3], Andrew Annex[1], Paul Schenk[4]
Institution(s): *[1.] University of Virginia, Charlottesville, VA. [2.] Cornell University, Ithaca, NY. [3.] Southwest Research Institute, Boulder, CO. [4.] Lunar and Planetary Institute, Houston, TX.*

502.09 Coherent Backscattering Effect in Saturnian vs. Uranian Satellites: Observations and Enhanced MSTM Modeling
Author(s): Karly M. Pitman[1], Ludmilla Kolokolova[2], Anne J. Verbiscer[3], Emily C. Joseph[1], Daniel W. Mackowski[4], Bonnie J. Buratti[5], Thomas W. Momary[5]
Institution(s): *[1.] Planetary Science Institute, Tucson, AZ. [2.] University of Maryland, College Park, MD. [3.] University of Virginia, Charlotte, VA. [4.] Auburn University, Auburn, AL. [5.] Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA.*

503 Asteroid Physical Characterization 3: NEAs, Active Asteroids, and Simulations

Friday, 10:30 am - 12:00 pm; Tucson Ballroom E/F

Chair(s): Nicholas Moskovitz *(Carnegie Institution of Washington)* **& Driss Takir** *(Ithaca College)*

503.01 The Physical, Geological, and Dynamical Nature of Asteroid (101955) Bennu - Target of OSIRIS-REx
Author(s): Dante Lauretta[1]
Institution(s): *[1.] Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ.*
Contributing team(s): OSIRIS-REx Team

503.02D Bidirectional Reflectance Distribution Functions For the OSIRIS-REx Target Asteroid (101955) Bennu
Author(s): Driss Takir[1], Beth E. Clark[1], Dante S. Lauretta[2], Christian Drouet d'Aubigny[2], Carl W. Hergenrother[2], Jian-Yang Li[3], Richard P. Binzel[4]
Institution(s): *[1.] Ithaca College, Ithaca, NY. [2.] Lunar and Planetary Laboratory, University of Arizona, Tucson, AZ. [3.] Planetary Science Institute, Tucson, AZ. [4.] Massachusetts Institute of Technology, Cambridge, MA.*

503.03 Numerical Simulations of Granular Processes
Author(s): Derek C. Richardson[1], Patrick Michel[2], Stephen R. Schwartz[2], Ronald-Louis Ballouz[1], Yang Yu[2], Soko Matsumura[3]
Institution(s): *[1.] University of Maryland, College Park, MD. [2.] University of Nice, CNRS, Côte d'Azur Observatory, Nice, France. [3.] University of Dundee, Dundee, United Kingdom.*

503.04 Tidal Disruption Revisited - Creating Bifurcated Shapes Among Rubble Pile Asteroids
Author(s): Kevin J. Walsh[1], Derek C. Richardson[2], Stephen R. Schwartz[3]
Institution(s): *[1.] Southwest Research Institute, Boulder, CO. [2.] University of Maryland, College Park, CO. [3.] University of Nice, CNRS, Côte d'Azur Observatory, Nice, Alpes Maritimes, France.*

503.05 The Effect of Shape Model Uncertainty on the Geophysical Predictions of Binary Asteroids
Author(s): Jay W. McMahon[1], Daniel Scheeres[1]
Institution(s): *[1.] University of Colorado - Boulder, Boulder, CO.*

503.06D Observations of Asteroid 2577 Litva with Analysis of Physical Properties Through Bayesian Interence Based Modeling
Author(s): Nathaniel B. Lust[1], Daniel Britt[1]
Institution(s): *[1.] University of Central Florida, Orlando, FL.*

503.07 Active Asteroids P/2013 P5 and P/2013 R3
Author(s): David Jewitt[1], Jessica Agarwal[2], Harold Weaver[3], Max Mutchler[4], Jing Li[1], Stephen Larson[5]
Institution(s): *[1.] UCLA, Los Angeles, CA. [2.] Max Planck Inst., Gottingen, Germany. [3.] Johns Hopkins Applied Physics Laboratory, Laurel, MD. [4.] Space Telescope Science Institute, Baltimore, MD. [5.] University Arizona, Tucson, AZ.*

503.08 Constraints on the Physical Properties of Main Belt Comet P/2013 R3 from its Breakup Event
Author(s): Masatoshi Hirabayashi[1], Daniel J. Scheeres[1], Diego P. Sánchez[1], Travis Gabriel[1]
Institution(s): *[1.] University of Colorado at Boulder, Boulder, CO.*

503.09 The Mission Accessible Near-Earth Object Survey (MANOS): Project Overview
Author(s): Nicholas Moskovitz[1], David Polishook[2], Cristina Thomas[3], Mark Willman[4], Francesca DeMeo[5], Michael Mommert[6], Thomas Endicott[7], David Trilling[6], Richard Binzel[2], Mary Hinkle[6], Hosea Siu[2], Kathryn Neugent[1], Eric Christensen[8], Michael Person[2], Brian Burt[2, 1], Will Grundy[1], Henry Roe[1], Paul Abell[9], Michael Busch[10]
Institution(s): *[1.] Lowell Observatory, Flagstaff, AZ. [2.] MIT, Cambridge, MA. [3.] NASA/GSFC, Greenbelt, MD. [4.] UH IfA, Hilo, HI. [5.] Harvard CfA, Cambridge, MA. [6.] NAU, Flagstaff, AZ. [7.] UMass Boston, Boston, MA. [8.] Uof/CSS, Tucson, AZ. [9.] NASA/JSC, Houston, TX. [10.] NRAO, Socorrow, NM.*

504 Origins of Planetary Systems 3

Friday, 10:30 am - 12:00 pm; Arizona Ballroom 7

Chair(s): Steven Desch *(Arizona State Univ.)* **&**
Ilaria Pascucci *(LPL/University of Arizona)*

504.01 Evolution of the proto-lunar disk and the origin of the Moon's material
Author(s): Sebastien Charnoz[1, 2], Chloe Michaut[2]
Institution(s): *[1.] Université Paris Diderot / CEA Saclay, Gif sur Yvette, France. [2.] Institut de Physique du Globe, Paris, France.*

504.02 Comparing Accretion Histories of Earth, Mars, and Theia Analogs
Author(s): Nathan A. Kaib[1, 2], Nick Cowan[1, 3]
Institution(s): *[1.] Northwestern University, Evanston, IL. [2.] Canegie Institution for Science, Washington, DC. [3.] Amherst College, Amherst, MA.*

504.03 Accretion and Core-Mantle Differentiation of the Earth and Other Terrestrial Planets
Author(s): Seth A. Jacobson[1, 2], David C. Rubie[1], Alessandro Morbidelli[2], David P. O'Brien[3], Edward D. Young[4], Jellie de Vries[1], Francis Nimmo[5], Herbert Palme[6], Dan J. Frost[1]
Institution(s): *[1.] University of Bayreuth, Bayreuth, Germany. [2.] Observatoire de la Cote d'Azur, Nice, France. [3.] Planetary Science Institute, Tucson, AZ. [4.] University of California, Los Angeles, CA. [5.] University of California, Santa Cruz, CA. [6.] Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt am Main, Germany.*

504.04 Ceres: Its Origin and Predicted Bulk Chemical Composition
Author(s): Andrew Prentice[1, 2]
Institution(s): *[1.] Monash Centre for Astrophysics, Monash University, Clayton, VIC, Australia. [2.] Astrophysics Group, University of Southern Queensland, Toowoomba, QLD, Australia.*

504.05 Linking the formation of comets to their activity
Author(s): Jürgen Blum[1], Bastian Gundlach[1]
Institution(s): *[1.] Institut für Geophysik und extraterrestrische Physik, TU Braunschweig, Braunschweig, Germany.*

504.06 Pebbles as Clues to Comet Formation
Author(s): Katherine A. Kretke[1], Harold F. Levison[1]
Institution(s): *[1.] Southwest Research Institute, Boulder, CO.*

504.07 Global Evolution of Solids in the Nebula: Implications for Outer Solar System Composition
Author(s): Paul R. Estrada[1], Jeffrey N. Cuzzi[2]
Institution(s): *[1.] Carl Sagan Center, SETI Institute, Mountain View, CA. [2.] NASA Ames Research Center, Moffett Field, CA.*

504.08D The formation of Uranus and Neptune on the CO iceline
Author(s): Mohamad Ali Dib[1], Olivier Mousis[1], Jean-Marc Petit[1], Jonathan I. Lunine[2]
Institution(s): *[1.] Institut Utinam, Universite de Franche-Comte, Besancon Cedex, France. [2.] Center for Radiophysics and Space Research, Cornell University, Ithaca, NY.*

504.09 Overcoming the Meter Barrier and The Formation of Systems with Tightly-packed Inner Planets (STIPs)
Author(s): Aaron C. Boley[1], Melissa A. Morris[2, 3], Eric B. Ford[4]
Institution(s): *[1.] The University of British Columbia, Vancouver, BC, Canada. [2.] Center for Meteorite Studies, Arizona State University, Tempe, AZ. [3.] State University of New York at Cortland, Cortland, NY. [4.] Center for Exoplanets and Habitable Worlds, The Pennsylvania State University, University Park, PA.*

505 Uranus, Neptune, and Giant Planet Interiors from Juno and Cassini

Friday, 10:30 am - 12:00 pm; Arizona Ballroom 11/ 12

Chair(s): Yohai Kaspi *(Weizmann Institute of Science)* **&**
Adam Showman *(Univ. of Arizona)*

505.01 Ten years of Cassini Discoveries in the Saturn System and More Excitement to Come
Author(s): Linda J. Spilker[1], Scott Edgington[1], Nicolas Altobelli[2]
Institution(s): *[1.] JPL, Pasadena, CA. [2.] ESA/ESAC, Villafranca del Castillo, Madrid, Spain.*

505.02 Inversion of Jupiter and Satrun gravity field into the atmospheric circulation on these planets - using the gravity measurements by Juno and Cassini and an adjoint based dynamical model
Author(s): Eli Galanti[1], Yohai Kaspi[1]
Institution(s): *[1.] Earth and Planetary Sciences, Weizmann Institute of Science, Rehovot, Israel.*

505.03 Validity of the "Laplace Swindle" in Calculation of Giant-Planet Gravity Fields
Author(s): William B. Hubbard[1]
Institution(s): *[1.] Univ. of Arizona, Tucson, AZ.*

505.04 Saturn Ring Seismology: Evidence for Stable Stratification in the Deep Interior of Saturn
Author(s): Jim Fuller[1, 2]
Institution(s): *[1.] Caltech, Pasadena, CA. [2.] Kavli Institute for Theoretical Physics, Santa Barbara, CA.*

505.05 Unusual activity in the atmosphere of Uranus in 2014
Author(s): Heidi B. Hammel[1], Imke de Pater[2], Larry Sromovsky[3], Pat Fry[3]
Institution(s): *[1.] AURA, Washington, DC. [2.] UC Berkeley, Berkeley, CA. [3.] U Wisconsin, Madison, WI.*

505.06 Uranus' Southern Circulation Revealed by Voyager-2 Images: Asymmetric, Unique, Unexpected
Author(s): Erich Karkoschka[1]
Institution(s): *[1.] Univ. of Arizona, Tucson, AZ.*

505.07 Models for Temperature and Composition in Uranus from Spitzer, Herschel and Ground-Based Infrared through Millimeter Observations
Author(s): Glenn S. Orton[1], Leigh N. Fletcher[2], Helmut Feuchtgruber[3], Emmanuel Lellouch[4], Raphel Moreno[4], Therese Encrenaz[4], Paul Hartogh[5], Christopher Jarchow[5], Bruce Swinyard[6, 7], Thibault Cavalie[5], Julianne Moses[8], Martin Burgdorf[9], Heidi Hammel[10], Michael Line[11], Amy K. Mainzer[1], Mark Hofstadter[1], Goran H. Sandell[12], C. Darren Dowell[13], Eric Pantin[14], Takuya Fujiyoshi[15]
Institution(s): *[1.] JPL, Pasadena, CA. [2.] University of Oxford, Oxford, United Kingdom. [3.] Max Planck Institute for Extraterrestrial Physics, Garching, Germany. [4.] Observatoire de Paris / LEISA, Meudon, France. [5.] Max Planck Institute for Solar System Research, Goettingen, Germany. [6.] University College London, London, United Kingdom. [7.] Rutherford-Appleton Laboratory, Didcot, United Kingdom. [8.] Space Science Institute, Boulder, CO. [9.] HE Space Operations, Bremen, Germany. [10.] Association of Universities for Research in Astronomy, Washington, DC. [11.] University of California, Santa Cruz, CA. [12.] NASA Ames Research Center, Moffett Field, CA. [13.] California Institute of Technology, Pasadena, CA. [14.] Centre d'Etudes Atomique, Saclay, France. [15.] Subaru Telescope, National Optical Observatory of Japan, Hilo, HI.*

505.08 Time variability of Neptune's horizontal and vertical cloud structure revealed by VLT/SINFONI and Gemini/NIFS from 2009 to 2013
Author(s): Patrick G. Irwin[1], Leigh N. Fletcher[1], Glenn S. Orton[2], Nicholas A. Teanby[5], Gary R. Davis[3], Dane Tice[1], Jane Hurley[4], Stephanie J. Owen[1]
Institution(s): *[1.] Physics (Atmospheric, Oceanic and Planetary Physics), University of Oxford, Oxford, Oxfordshire, United Kingdom. [2.] Jet Propulsion Laboratory, Pasadena, CA. [3.] Joint Astronomy Centre, Hilo, HI. [4.] Rutherford Appleton Laboratory, Didcot, Oxfordshire, United Kingdom. [5.] University of Bristol, Bristol, United Kingdom.*

505.09 A Deep-Seated Ocean in Uranus and Neptune
Author(s): David J. Stevenson[1]
Institution(s): *[1.] Caltech, Pasadena, CA.*

506 Asteroid Physical Characterization 4: Colors and Composition

Friday, 1:30 pm - 3:00 pm; Tucson Ballroom E/F

Chair(s): Zoe Landsman *(University of Central Florida)* **&**
Erin Ryan *(ORAU-Goddard Space Flight Center)*

506.01 Space Weathering in Olivine and the Mineralogy of (Some) M-Class Asteroids
Author(s): Daniel Britt[1], Tomas Kohout[3], Patrick Schelling[2], Guy J. Consolmagno[4]
Institution(s): *[1.] University of Central Florida, Orlando, FL. [2.] University of Central Florida, Orlando, FL. [3.] University of Helsinki, Helsinki, Finland. [4.] Vatican Observatory, Vatican City, Italy.*

506.02 Can We Distinguish Between Shock-Darkened and Space-Weathered Asteroids?
Author(s): Tomas Kohout[1, 2], Antti Penttila[1], Maria Gritsevich[3], Daniel Britt[4], Vishnu Reddy[5], Paul Mann[6], Jakub Haloda[7], Patricie Halodova[7], Viktor Grokhovsky[8], Grigoriy Yakovlev[8], Jan Cuda[9], Jan Filip[9], Karri Muinonen[1], Radek Zboril[9]
Institution(s): *[1.] Department of Physics, University of Helsinki, Helsinki University, Finland. [2.] Institute of Geology, Academy of Sciences, Prague, Czech Republic. [3.] Finnish Geodetical Institute, Masala, Finland. [4.] University of Central Florida, Orlando, FL. [5.] Planetary Science Institute, Tucson, AZ. [6.] University of Winnipeg, Winnipeg, MB, Canada. [7.] Czech Geological Survey, Prague, Czech Republic. [8.] Ural Federal University, Ekaterinburg, Russian Federation. [9.] Regional Centre of Advanced Technologies and Materials, Palacky University, Olomouc, Czech Republic.*

506.03 New Results on Hydration in M-Type Asteroids
Author(s): Zoe A. Landsman[1], Humberto Campins[1], Noemí Pinilla-Alonso[2], Joshua P. Emery[2], Vania Lorenzi[3]
Institution(s): *[1.] University of Central Florida, Oviedo, FL. [2.] University of Tennessee, Knoxville, TN. [3.] Fundación Galileo Galilei - INAF, , Breña Baja, Spain.*

506.04 The Surface Composition of the Asteroid (21) Lutetia From HST/STIS Observations in the Near Ultraviolet
Author(s): Andrew J. Steffl[1], Eric Schindhelm[1], Hal A. Weaver[2], S. Alan Stern[1]
Institution(s): *[1.] Southwest Research Institute, Boulder, CO. [2.] Johns Hopkins University Applied Physics Laboratory, Laurel, MD.*

506.05 Pyroxene Spectroscopy: Remote Characterization of Composition, Structure and Thermal History
Author(s): Rachel L. Klima[1], Darby Dyar[2], Timothy Glotch[3], Melissa Lane[4]
Institution(s): *[1.] Johns Hopkins University Applied Physics Laboratory, Laurel, MD. [2.] Mount Holyoke College, South Hadley, MA. [3.] Stony Brook University, Stonybrook, NY. [4.] Planetary Science Institute, Tucson, AZ.*

506.06 Medium Rare or Well Done? Asteroid Melting in the Hungaria Region
Author(s): Michael P. Lucas[1], Joshua P. Emery[1], Vania Lorenzi[2], Noemí Pinilla-Alonso[1], Sean S. Lindsay[3]
Institution(s): *[1.] Department of Earth & Planetary Sciences, University of Tennessee, Knoxville, TN. [2.] Fundación Galileo Galilei - Istituto Nazionale di Astrofisica, E-38712 Breña Baja, Spain. [3.] Atmospheric, Oceanic and Planetary Physics, University of Oxford, Oxford, United Kingdom.*

506.07 Mineralogy of dark asteroids: Detection of phyllosilicate features in the mid-infrared
Author(s): Margaret McAdam[1], Jessica Sunshine M. Sunshine [1], Michael S. Kelley[1]
Institution(s): *[1.] Astronomy, University of Maryland, College Park , MD.*

506.08 The Colors of Hilda Group Asteroids: Complications For Use in Testing Dynamical Models
Author(s): Erin L. Ryan[1, 2], Keith Noll[2], Charles E. Woodward[3]
Institution(s): *[1.] University of Maryland, College Park, MD. [2.] NASA Goddard Space Flight Center, Greenbelt, MD. [3.] Minnesota Institute for Astrophysics, University of Minnesota-Twin Cities, Minneapolis, MN.*

506.09 Shape and Size of Patroclus and Menoetius from a Stellar Occultation
Author(s): Marc W. Buie[1], Catherine B. Olkin[1], William J. Merline[1], Brad Timerson[5], Dave Herald5, William M. Owen[2], Harry B. Abramson[5], Katherine J. Abramson[5], Derek C. Breit[5], D. B. Caton[4, 5], Steve J. Conard[5], Mark A. Croom[3, 5], R. W. Dunford[5], J. A. Dunford[5], David W. Dunham[5], Chad K. Ellington[5], Yanzhe Liu[5], Paul D. Maley[5], Aart M. Olsen[5], Ronald Royer[5], Andrew E. Scheck[5], Clay Sherrod[5], Lowell Sherrod[5], Theodore J. Swift[5], Lawrence W. Taylor[3, 5], Roger Venable[5]
Institution(s): *[1.] Southwest Research Institute, Boulder, CO. [2.] Jet Propulsion Laboratory, Pasadena, CA. [3.] NASA Langley Research Center, Hampton, VA. [4.] Applachian State University, Boone, NC. [5.] International Occultation Timing Association, Menen, Nauru.*

507 TNOs and Centaurs: Populations and Dynamics

Friday, 1:30 pm - 3:00 pm; Arizona Ballroom 7

Chair(s): R. Lynne Jones *(Univ. of Washington)* **&**
Kathryn Volk *(University of British Columbia)*

507.01 OSSOS: The Outer Solar System Origins Survey
Author(s): Brett Gladman[1], Michele Bannister[2, 3], Jj Kavelaars[3, 2], Jean-Marc Petit[4], Stephen Gwyn[3], Ying-Tung Chen[5]
Institution(s): *[1.] Univ. of British Columbia, Vancouver, BC, Canada. [2.] University of Victoria, VIctoria, BC, Canada. [3.] Hertzberg Inst. of Astrophysics, Victoria, BC, Canada. [4.] Observatoire de Besancon, Besancon, France. [5.] Academia Sinica, Taipei, Taiwan.*
Contributing team(s): OSSOS Collaboration

507.02 Preliminary models of the resonant trans-Neptunian populations from the Outer Solar System Origins Survey
Author(s): Kathryn Volk[1, 2], Brett Gladman[1], Ruth Murray-Clay[3], Samantha Lawler[4, 5]
Institution(s): *[1.] University of British Columbia, Vancouver, BC, Canada. [2.] Canadian Institute for Theoretical Astrophysics, Toronto, ON, Canada. [3.] University of California, Santa Barbara, CA. [4.] University of Victoria, Victoria, BC, Canada. [5.] Herzberg Institute of Astrophysics, Victoria, BC, Canada.*

507.03 The Effect of Dwarf Planets on the Dynamics of the Kuiper Belt
Author(s): Marco A. Muñoz[1], Barbara Pichardo[1], Mauricio Reyes[2]
Institution(s): *[1.] DATA, Instituto de Astronomía, UNAM, México, DF, Distrito Federal, Mexico. [2.] Instituto de Astronomía, UNAM, Ensenada, Baja California, Mexico.*

507.04 The 5:1 Neptune Resonance: Dynamics and Population
Author(s): Rosemary E. Pike[1], J. J. Kavelaars[2, 1], Brett Gladman[3], Jean-Marc Petit[4], Mike Alexandersen[3]
Institution(s): *[1.] University of Victoria, Victoria, BC, Canada. [2.] National Research Council of Canada, Herzberg, Victoria, BC, Canada. [3.] University of British Columbia, Vancouver, BC, Canada. [4.] Institut UTINAM, Besancon, France.*

507.05 All Bright Cold Classical KBOs are Binary
Author(s): Keith S. Noll[1], Alex H. Parker[2], William M. Grundy[3]
Institution(s): *[1.] NASA, Greenbelt, MD. [2.] SwRI, Boulder, CO. [3.] Lowell Observatory, Flagstaff, AZ.*

507.06 Towards a Model of the Trans-Neptunian Binary Population
Author(s): Alex H. Parker[1], Keith S. Noll[2]
Institution(s): *[1.] SwRI, Boulder, CO. [2.] NASA Goddard, Greenbelt, MD.*

507.07 A Precise Description of the Hot Classical Belt from the High Lattitude Ecliptic Survey
Author(s): Jean-Marc Petit[1], John J. Kavelaars[2, 3], Brett Gladman[4], Lynne Jones[5], Joel Parker[6]
Institution(s): *[1.] Institut UTINAM, CNRS / Université de Franche Comté, Besançon, Doubs, France. [2.] Herzberg Institute of Astrophysics, NRC, VIctoria, BC, Canada. [3.] University of Victoria, Victoria, BC, Canada. [4.] University of British Columbia, Vancouver, BC, Canada. [5.] University of Washington, Seattle, WA. [6.] Southwest Research Institute, Boulder, CO.*
Contributing team(s): CFHT QSO Team

507.08D On the high inclination KBOs common dynamical formation
Author(s): Pedro Ivo I. De Oliveira Brasil[1, 3], Rodney S. Gomes[2, 3], David Nesvorny[3]
Institution(s): *[1.] Divisão de Mecânica Espacial e Controle, Instituto Nacional de Pesquisas Espaciais, São José dos Campos, SP, Brazil. [2.] Observatório Nacional - ON, Rio de Janeiro, RJ, Brazil. [3.] Southwest Research Institute - SwRI, Bouder, CO.*

507.09 Sedna, 2012 VP113 and the Inner Oort Cloud Population
Author(s): Chadwick A. Trujillo[1], Scott S. Sheppard[2]
Institution(s): *[1.] Gemini Obs., Hilo, HI. [2.] Carnegie Institution for Science, Washington, DC.*

508 Saturn Poles and Stratosphere

Friday, 1:30 pm - 3:00 pm; Arizona Ballroom 11/ 12

Chair(s): Thomas Greenhouse *(Southwest Research Institute)*
Nicholas Heavens *(Cornell University)*

508.01 Dynamics of Saturn's Polar Regions
Author(s): Arrate Antuñano[1], Teresa del Río Gaztelurrutia[1, 2], Agustin Sánchez Lavega[1, 2], Ricardo Hueso[1, 2]
Institution(s): *[1.] 1Departamento de Física Aplicada I, E.T.S. Ingeniería, Universidad del País Vasco, Bilbao, Bizkaia, Spain. [2.] Unidad Asociada Grupo Ciencias Planetarias UPV/EHU- IAA (CSIC). , Bilbao, Bizkaia, Spain.*

508.03 Analysis of Saturn's Polar Vortices with Cassini ISS Images
Author(s): Kunio M. Sayanagi[1], Ulyana A. Dyudina[2], Shawn P. Ewald[2], Andrew P. Ingersoll[2]
Institution(s): *[1.] Hampton University, Hampton, VA. [2.] California Institute of Technology, Pasadena, CA.*

508.04D Polar Vortices in Shallow Water Simulations of Gas Giants
Author(s): Morgan E. O'Neill[1], Kerry Emanuel[1]
Institution(s): *[1.] EAPS, Massachusetts Institute of Technology, Cambridge, MA.*

508.05 Saturn's Tropospheric Temperatures and Para-Hydrogen Distribution from Ten Years of Cassini Observations

Author(s): Leigh N. Fletcher[1], Patrick G. Irwin[1], James Sinclair[1], Rohini Giles[1], Joanna Barstow[1], Richard K. Achterberg[2], Glenn S. Orton[3]

Institution(s): *[1.] Atmospheric, Oceanic and Planetary Physics, University of Oxford, Oxford, United Kingdom. [2.] University of Maryland, College Park, MD. [3.] NASA Jet Propulsion Laboratory, Pasadena, CA.*

508.06 Atmospheric Structure in Saturn's Equatorial Region from Cassini Radio Occultations: 2005-2012

Author(s): F. M. Flasar[1], Paul J. Schinder[2], Richard G. French[3], Essam A. Marouf[4], Arvydas J. Kliore[5]

Institution(s): *[1.] NASA's GSFC, Greenbelt, MD. [2.] Cornell University, Ithaca, NY. [3.] Wellesley College, Wellesley, MA. [4.] San Jose State University, San Jose, CA. [5.] Jet Propulsion Laboratory, Pasadena, CA.*

508.07 Evolution of Stratospheric Chemistry in the Saturn Storm Beacon

Author(s): Julianne I. Moses[1], Eleanor S. Armstrong[2], Leigh N. Fletcher[2], Patrick G. Irwin[2], Brigette E. Hesman[3], Paul N. Romani[4]

Institution(s): *[1.] Space Science Institute, Boulder, CO. [2.] University of Oxford, Oxford, United Kingdom. [3.] University of Maryland, College Park, MD. [4.] NASA GSFC, Greenbelt, MD.*

508.08D 2D-photochemical modeling of Saturn's stratosphere: hydrocarbon and water distributions

Author(s): Vincent Hue[1, 2], Thibault Cavalié[3], Franck Hersant[1, 2], Michel Dobrijevic[1, 2], Thomas Greathouse[4], Emmanuel Lellouch[5], Paul Hartogh[3], Timothy Cassidy[6], Aymeric Spiga[7], Sandrine Guerlet[7], Melody Sylvestre[5, 7]

Institution(s): *[1.] Univ. Bordeaux, LAB, UMR 5804, Floirac, France. [2.] CNRS, LAB, UMR 5804, Floirac, France. [3.] Max Planck Institut für Sonnensystemforschung, Katlenburg-Lindau, Germany. [4.] Southwest Research Institute, San Antonio, TX. [5.] LESIA - Observatoire de Paris, CNRS, Univ. Paris 06, Univ. Paris-Diderot, Meudon, France. [6.] Laboratory for Atmospheric and Space Physics, Univ. of Colorado Boulder, Boulder, CO. [7.] Laboratoire de Météorologie Dynamique (LMD), Univ. Pierre et Marie Curie (UPMC), Institut Pierre Simon Laplace (IPSL), Paris, France.*

508.09 An exploration of Saturn's stratospheric dynamics through Global Climate Modeling

Author(s): Aymeric Spiga[1, 2], Sandrine Guerlet[2], Mikel Indurain[2], Ehouarn Millour[2], Mélody Sylvestre[3, 1], Fouchet Thierry[3], Yann Meurdesoif[4], Dubos Thomas[5]

Institution(s): *[1.] LMD / Université Pierre et Marie Curie, Paris, France. [2.] LMD / Centre National de la Recherche Scientifique, Paris, France. [3.] LESIA / Université Pierre et Marie Curie, Meudon, France. [4.] LSCE / CEA, Gif-sur-Yvette, France. [5.] LMD / Ecole Polytechnique, Paris, France.*

509 Asteroid Physical Characterization 5

Friday, 3:30 pm - 5:30 pm; Tucson Ballroom E/F

Chair(s): Carolyn Nugent *(JPL)* **& Sarah Sonnett** *(Univ. Of Hawaii)*

509.01 Current and Future Space-Based Mid-Infrared Surveys for Minor Planets
Author(s): Amanda K. Mainzer[1], Tommy Grav[2], James Bauer[1], Joseph Masiero[1], Roc M. Cutri[3], Carolyn R. Nugent[1], Rachel Stevenson[1], Edward L. Wright[4]
Institution(s): *[1.] JPL, Pasadena, CA. [2.] Planetary Science Institute, Tucson, AZ. [3.] IPAC/Caltech, Pasadena, CA. [4.] UCLA, Los Angeles, CA.*

509.02 Near-Infrared Albedos of Main Belt Asteroids and Families from NEOWISE
Author(s): Joseph R. Masiero[1], T. Grav[2], A. K. Mainzer[1], C. R. Nugent1, J. M. Bauer[1], R. Stevenson[1], S. Sonnett[1]
Institution(s): *[1.] JPL, Pasadena, CA. [2.] PSI, Tucson, AZ.*

509.03 Near-Earth asteroid surface thermal inertias with NEOWISE
Author(s): Carolyn Nugent[1], Amy Mainzer[1], Joseph Masiero[1], Mark Lysek[1], Tommy Grav[2], James Bauer[1], Roc Cutri[3], Edward Wright[4]
Institution(s): *[1.] JPL/Caltech, Pasadena, CA. [2.] Planetary Science Institute, Tucson, AZ. [3.] Infrared Processing and Analysis Center (IPAC), Caltech, Pasadena, CA. [4.] UCLA, Los Angeles, CA.*

509.04 Binary Candidates and Fractions in the Jovian Trojan and Hilda Populations from NEOWISE Lightcurves
Author(s): Sarah M. Sonnett[1], A. Mainzer[1], T. Grav[2], J. Masiero[1], J. M. Bauer[1]
Institution(s): *[1.] Jet Propulsion Laboratory, Pasadena, CA. [2.] Planetary Science Institute, Tucson, AZ.*

509.05 Thermal Intertias of Main-Belt Asteroids from Wise Thermal Infrared Data
Author(s): Josef Hanus[1, 2], Marco Delbo'[1], Josef Durech[2], Victor Alí-Lagoa[3]
Institution(s): *[1.] Laboratoire Lagrange, UNS-CNRS, Observatoire de la Côte d'Azur, Nice, France. [2.] Astronomical Institute, Faculty of Mathematics and Physics, Charles University in Prague, Prague, Czech Republic. [3.] Instituto de Astrofísica de Canarias, Tenerife, Spain.*

509.06 Shape-Based Thermal Modeling of Three Near-Earth Asteroids
Author(s): Sean Marshall[1], Ronald J. Vervack[2], Christopher Magri[3], Ellen S. Howell[4], Yanga R. Fernandez[5], Donald B. Campbell[1], Michael C. Nolan[4], Patrick A. Taylor[4], Joseph T. Pollock[6], Michael D. Hicks[7]
Institution(s): *[1.] Cornell University, Ithaca, NY. [2.] Johns Hopkins University / Applied Physics Laboratory, Laurel, MD. [3.] University of Maine at Farmington, Farmington, ME. [4.] Arecibo Observatory, Arecibo, Puerto Rico. [5.] University of Central Florida, Orlando, FL. [6.] Appalachian State University, Boone, NC. [7.] Jet Propulsion Laboratory / California Institute of Technology, Pasadena, CA.*

509.07 Estimating Asteroid Thermal Inertia from Multi-epoch Observations
Author(s): Eric M. MacLennan[1], Joshua P. Emery[1]
Institution(s): *[1.] University of Tennessee, Knoxville, TN.*

509.08 Detection of cohesive forces in the rubble-pile asteroid (29075) 1950 DA
Author(s): Benjamin Rozitis[1], Eric MacLennan[1], Joshua P. Emery[1]
Institution(s): *[1.] Department of Earth and Planetary Sciences, University of Tennessee, Knoxville, TN.*

509.09 Precessing Asteroids ftrom Radius Vector Models?
Author(s): Jack D. Drummond[1]
Institution(s): *[1.] Starfire Optical Range, Kirtland AFB, NM.*

509.10 Asteroid shapes and spins reveal a preferred erosional state of maximum surface stability
Author(s): James E. Richardson[1], Kevin J. Graves[2], Timothy J. Bowling[2]
Institution(s): *[1.] Arecibo Observatory, Arecibo, Puerto Rico. [2.] Purdue University, West Lafayette, IN.*

509.11 Physical properties of asteroids derived from a novel approach to modeling of optical lightcurves and WISE thermal infrared data
Author(s): Josef Durech[1], Josef Hanus[2, 1], Marco Delbo[2], Victor Ali-Lagoa[3], Benoit Carry[4]
Institution(s): *[1.] Astronomical Institute, Charles University in Prague, Prague, Czech Republic. [2.] Observatoire de la Cote d'Azur, Nice, France. [3.] Instituto de Astrofisica de Canarias, La Laguna, Tenerife, Spain. [4.] Institut de Mecanique Celeste at de Calcul des Ephemerides, Paris, France.*

509.12 Spin Axis Distribution of the Hungaria Asteroids via Lightcurve Inversion
Author(s): Brian D. Warner[1, 3], Alan W. Harris[3], Robert D. Stephens[2, 3], Daniel Coley[2]
Institution(s): *[1.] Center for Solar System Studies, Eaton, CO. [2.] Center for Solar System Studies, Landers, CA. [3.] MoreData!, Rancho Cucamonga, CA.*

510 TNOs and Centaurs: Characterization

Friday, 3:30 pm - 5:00 pm; Arizona Ballroom 7

Chair(s): Melissa Brucker & Noemi Pinilla-Alonso *(SETI Institute)*
Audrey Thirouin *(Lowell Observatory)*

510.01 Volatile Loss and Classification of Kuiper Belt Objects
Author(s): Robert E. Johnson[1, 4], Apurva Oza[1], Leslie A. Young[2], Alexey N. Volkov[3], Carl A. Schmidt[1]
Institution(s): *[1.] Univ. of Virginia, Charlottesville, VA. [2.] SwRI, Boulder, CO. [3.] University of Alabama, Tuscaloosa, AL. [4.] New York University, New York, NY.*

510.02 Irradiation chemistry in the outer solar system
Author(s): Michael E. Brown[1]
Institution(s): *[1.] Caltech, Pasadena, CA.*

510.03 Methane and Nitrogen Abundances on the Icy Dwarf Planet Makemake
Author(s): Stephen C. Tegler[1], William M. Grundy[2], Randy Dillingham[1], Derek Fish[1], Nathan Hendler[1, 3], Terry Sufflebeam[1]
Institution(s): *[1.] Northern Arizona Univ., Flagstaff, AZ. [2.] Lowell Obs., Flagstaff, AZ. [3.] Univ. Arizona, Tucson, AZ.*

510.04 A New, Longitudinally Resolved, Spectroscopic Characterization of Quaoar's Surface

Author(s): Cristina M. Dalle Ore[1, 2], Maria A. Barucci[3], Davide Perna[3], Alain Doressoundiram[3], Alvaro Alvarez-Candal[4], Christian Nitschelm[5], Dale P. Cruikshank[2]

Institution(s): *[1.] SETI Institute, Mountain View, CA. [2.] NASA Ames Research Center, Moffett Field, CA. [3.] LESIA, Observatoire de Paris, Meudon , France. [4.] Observatório Nacional, Rio de Janeiro, Brazil. [5.] Unidad de Astronomía de la Universidad de Antofagasta, Antofagasta, Chile.*

510.05 A new look at the visible color correlations of Centaurs and KBOs: what's there and what we may be missing.

Author(s): Nuno Peixinho[1], Audrey Delsanti[2, 3], Alain Doressoundiram[3]

Institution(s): *[1.] Unidad de Astronomía de la Universidad de Antofagasta, Antofagasta, Chile. [2.] Laboratoire d'Astrophysique de Marseille, Université d'Aix-Marseille, CNRS, Marseille, France. [3.] Observatoire de Paris, Site de Meudon, Meudon, France.*

510.06 TNOs as probes of planet building: the Plutino size- & colour-distributions

Author(s): Mike Alexandersen[1], Brett Gladman[1], Jj Kavelaars[2, 3], Jean-Marc Petit[4], Stephen Gwyn[2], Cory Shankman[3, 2], Rosemary Pike[3, 2]

Institution(s): *[1.] University of British Columbia, Vancouver, BC, Canada. [2.] National Research Council of Canada, Victoria, BC, Canada. [3.] University of Victoria, Victoria, BC, Canada. [4.] Institut UTINAM, Besancon, France.*

510.07 The synchronous rotations of Eris/Dysnomia and Orcus/Vanth binary systems

Author(s): David L. Rabinowitz[1], Yasi Owainati[2]

Institution(s): *[1.] Yale Univ., New Haven, CT. [2.] Darien High School, Darien, CT.*

510.08 New Horizons: Long-Range Kuiper Belt Targets Observed by the Hubble Space Telescope

Author(s): Susan D. Benecchi[1, 2], Keith Noll[3], Harold Weaver[4], John Spencer[5], S. A. Stern[5], Marc Buie[5], Alex Parker[6, 5]

Institution(s): *[1.] Planetary Science Institute, Herndon, VA. [2.] Department of Terrestrial Magnetism, Carnegie Institution of Washington, Washington, DC. [3.] NASA Goddard Space Fight Center, Greenbelt, MD. [4.] Johns Hopkins University Applied Physics Laboratory, Laurel, MD. [5.] Southwest Research Institute, Boulder, CO. [6.] University of California at Berkeley, Berkeley, CA.*

510.09 The Use of Stellar Occultations to Study Trans-Neptunian Objects

Author(s): GUSTAVO B. ROSSI[1, 2], Bruno Sicardy[1, 4], Felipe Braga-Ribas[2], Roberto Vieira Martins[2], Julio Camargo[2], Marcelo Assafin[3]

Institution(s): *[1.] LESIA, OBSERVATOIRE DE PARIS, Rio de Janeiro, RIO DE JANEIRO, Brazil. [2.] OBSERVATORIO NACIONAL, Rio de Janeiro, RJ, Brazil. [3.] OBSERVATORIO DO VALONGO, Rio de Janeiro, RJ, Brazil. [4.] Universite Pierre et Marie Curie, Université Paris-Diderot, Meudon, Ile de France, France.*

511 Jupiter and Saturn Atmospheric Structure and Clouds

Friday, 3:30 pm - 5:00 pm; Arizona Ballroom 11/ 12

Chair(s): Nancy Chanover *(New Mexico State Univ.)* **&**
Kunio Sayanagi *(Hampton University)*

511.01 Progress in Studying Radiation Energy Budgets of Jupiter, Saturn, and Titan
Author(s): Liming Li[1], Barney J. Conrath[2], Peter J. Gierasch[2], Robert A. West[3], Santiago Perez-Hoyos[4], Kevin H. Baines[3], Patrick M. Fry[5], Richard K. Achterberg[6], Conor A. Nixon[6], F. M. Flasar[7]
Institution(s): *[1.] University of Houston, Sugar Land, TX. [2.] Cornell University, Ithaca, NY. [3.] Caltech/JPL, Pasadena, CA. [4.] UPV/EHU, Bilbao, Spain. [5.] University of Wisconsin-Madison, Madison, WI. [6.] University of Maryland, College Park, MD. [7.] NASA/GSFC, Greenbelt, MD.*
Contributing team(s): Cassini CIRS,ISS, and VIMS teams

511.02 Cloud structure of Jupiter's troposphere from Cassini VIMS
Author(s): Rohini S. Giles[1], Leigh N. Fletcher[1], Patrick G. Irwin[1]
Institution(s): *[1.] Atmospheric, Oceanic and Planetary Physics, Oxford University, Oxford, United Kingdom.*

511.03 Longitude-resolved VLA Radio Maps of Jupiter
Author(s): Imke de Pater[1], R. J. Sault[3], Bryan Butler[2], David deBoer[1]
Institution(s): *[1.] UC, Berkeley, Berkeley, CA. [2.] NRAO, Socorro, NM. [3.] University Melbourne, Melbourne, VIC, Australia.*

511.04 The Latitudinal Variation of Jupiter's Deep Cloud Structure
Author(s): Gordon Bjoraker[1], Imke de Pater[2], Michael H. Wong[2], Mate Adamkovics[2]
Institution(s): *[1.] NASA's GSFC, Greenbelt, MD. [2.] UC-Berkeley, Berkeley, CA.*

511.05 Why is the Great Red Spot Red? The Exogenic, Photolytic Origin of the UV/ Blue-Absorbing Chromophores of Jupiter's Great Red Spot as Determined by Spectral Analysis of Cassini/VIMS Observations using New Laboratory Optical Coefficients
Author(s): Kevin H. Baines[1], Robert W. Carlson[1], Thomas W. Momary[1]
Institution(s): [1.] NASA/Jet Propulsion Laboratory, Pasadena, CA.

511.06 Jovian Mid-Infrared Aurora: Retrospective Analysis of Variability and Cassini Flyby Measurements in Preparation for Juno
Author(s): Theodor Kostiuk[1], Tilak Hewagama[2, 1], Timothy A. Livengood[2, 1], Kelly E. Fast[3], Ronald Carlson[4], Robert MacDowall[1], Donald E. Jennings[1], Rebecca Pitts[1]
Institution(s): *[1.] NASA GSFC, Greenbelt, MD. [2.] U. Maryland, College Park, MD. [3.] NASA HQ, Washington DC, DC. [4.] Catholic U. A., Washington DC, DC.*

511.07 Saturn's Zonal Winds at Cloud Level between 2004-2013 from Cassini ISS Images
Author(s): John J. Blalock[1], Kunio M. Sayanagi[1], Ulyana A. Dyudina[2], Shawn P. Ewald[2], Andrew P. Ingersoll [2]
Institution(s): *[1.] Hampton University, Hampton, VA. [2.] California Institute of Technology, Pasadena, CA.*

511.08 The variability of Saturn's thermosphere from Cassini/UVIS occultations
Author(s): Tommi Koskinen[1], Bill R. Sandel[1], Roger V. Yelle[1]
Institution(s): *[1.] Lunar and Planetary Laboratory, Tucson, AZ.*

511.09 Vertical structure of Saturn lightning storms and storm-related dark ovals
Author(s): Lawrence A. Sromovsky[1], Kevin H. Baines[1], Patrick M. Fry[1]
Institution(s): *[1.] Univ. of Wisconsin, Madison, Madison, WI.*

512 Jupiter and Saturn Composition

Friday, 5:00 pm - 5:30 pm; Arizona Ballroom 11/ 12

Chair(s): Leigh Fletcher *(University of Oxford)* **& Linda Spilker** *(JPL)*

512.01 Saturn's Helium Abundance from Cassini VIMS Stellar Occultations and CIRS Limb Temperature Profiles
Author(s): Don Banfield[1], Peter J. Gierasch[1], Barney J. Conrath[1], Richard K. Achterberg[2], Phillip D. Nicholson[1], Matthew M. Hedman[3]
Institution(s): *[1.] Cornell Univ., Ithaca, NY. [2.] NASA Goddard Space Flight Center, Greenbelt, MD. [3.] University of Idaho, Moscow, ID.*

512.02 Abundances of Elements in Jupiter's Atmosphere
Author(s): Steven Desch[1], Nikhil Monga[1]
Institution(s): *[1.] Arizona State Univ., Tempe, AZ.*

512.03 New Insights on Jupiter's Deep Water Abundance from Disequilibrium Species
Author(s): Dong Wang[1], Peter Gierasch[1], Jonathan Lunine[1], Olivier Mousis[1, 2]
Institution(s): *[1.] Astronomy and Space Science, Cornell University, Ithaca, NY. [2.] Institut UTINAM, Besançon, Franche-Comté, France.*

AUTHORS INDEX

AUTHORS INDEX

AUTHORS INDEX

AUTHORS INDEX

AUTHORS INDEX

AUTHORS INDEX

AUTHORS INDEX

AUTHORS INDEX

AUTHORS INDEX

NOTES

NOTES

NOTES