

# Magnetospheres of the Outer Planets

July 11-15, 2011

Boston University

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David Bradford (BU)  
Nicole Cahill (BU)  
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Patricia Schippers (Univ. Iowa)  
Thomas Stallard (Univ. Leicester)  
Jan-Erik Wahlund (IRFU)  
J. Waite, Jr. (SwRI)  
Philippe Zarka (Obs. Paris)

***Invited tutorial talks = 20 + 5 = 25 mins (name, title in bold italics)***

*Invited topical talks = 20+5 = 25 mins (name, title in italics)*

Contributed talks = 12+2 = 14 mins

<b>Sunday</b>	<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
08.30	08.30	08.30	08.30	08.30	08.30
	<b>1 - Moons</b>	<b>2 - Structure/Dyn amics</b>	<b>4 - Saturn Rotation</b>	<b>5 - Aurora</b>	<b>7 - Modeling Workshops</b>
10.03	Break	Break	Break	Break	Break
10.35	<b>1 - Moons</b>	<b>2 - Structure/Dyn amics</b>	<b>4 - Saturn Rotation</b>	<b>5 - Aurora</b>	<b>8 - Atmos./Ionos./Struc./Dyn.</b>
12.00	Lunch	Lunch	Lunch	Lunch	Lunch
1.45	<b>1 - Moons</b>	<b>2 - Structure/Dyn amics</b>	<b>Excursion</b>	<b>5 - Aurora</b>	<b>8 - Structure/Dyn amics</b>
3.30	Break	Break	Break	Break	Break
4.00	<b>1 - Moons</b>	<b>3 - Posters</b>	<b>Excursion</b>	<b>6 - Posters / Rotation workshop</b>	<b>Future Missions</b>
				Banquet	

Sunday evening reception (5-7pm) will be held at The Castle, Boston University, 225 Bay State Road.

Also:

- MOP 2011 group photo - which will join photos of previous meetings posted at <http://lasp.colorado.edu/mop/conference/>
- Discussion of the next MOP meeting will be held before the break on Tuesday afternoon.

## MONDAY

**8.30 am**      **Welcome – John Clarke, Boston University**

### **SESSION 1 – Moons**

- 8.45am**      **1**      *Delamere, Peter*      *Satellites and interactions*  
9.10am      2      *Roussos, Elias*      *Energetic charged particle absorption signatures in Saturn's magnetosphere: observations and applications*  
9.35am      3      Saur, Joachim      Moon-Planet and Exoplanet-Star Couplings: Common sub-Alfvénic Interaction Mechanisms Throughout the Universe  
9.49am      4      Winglee, Robert      Io's Plasma Interaction with the Plasma Torus within the Jovian Magnetosphere

### **10.03-10.35am - Break**

- 10.35am      5      Roth, Lorenz      Variations of the auroral emission from Io's atmosphere  
10.49am      6      *Bertucci, Cesar*      *Titan's Plasma Environment and Interaction*  
11.14am      7      Johnson, Robert E      Plasma-induced Sputtering and Heating of Titan's Atmosphere  
11.28am      8      Sillanpää, Ilkka      Cassini Data Comparison with Hybrid Model: Role of Oxygen Ions in Titan's Interaction  
11.42am      9      Cray, Frank      Titan's interaction with Saturn's magnetosphere: Plasma flow and composition observed by Cassini/CAPS

### **12.00-1.45pm - Lunch**

- 1.45am      10      Wellbrock, Anne      Density trends of negative ions at Titan  
1.59pm      11      Ma, Yingjuan      Multi-fluid MHD study on Ion Loss from Titan's Atmosphere  
2.13pm      12      Snowden, Darci      3D Multi-fluid Modeling of Ion-neutral Interactions in Titan's Ionosphere  
2.27pm      13      *Jones, Geraint H.*      *Dust Observations at Rhea and Enceladus using Plasma Instrumentation*  
2.52pm      14      Simon, Sven      Plasma interactions of Saturn's icy satellites: Analytical modelling of Cassini MAG data from Enceladus, Dione and Rhea  
3.06pm      *Discussion*

### **3.30-4.00pm - Break**

- 4.00pm      15      Jia, Yingdong      Perpendicular Flow Separation in a Magnetized Counterstreaming Plasma: Application to the Dust Plume of Enceladus  
4.14pm      16      Hill, Tom      Charged nanograins in the Enceladus plume

4.28pm	17	Kriegel, Hendrik	Influence of negatively charged plume grains on the structure of Enceladus' Alfvén wings: hybrid simulations versus Cassini MAG data
4.42pm	18	Barabash, Stas	Hybrid Simulations of the Callisto - Magnetosphere Interaction
4.56pm	19	Seufert, Mario	Callisto's Plasma Interaction and Induced Fields from a Subsurface Ocean
5.10pm	20	Payan, Alexia	Uncovering Local Magnetospheric Processes Governing the Variability of Ganymede's Aurora Using 3D Multi-Fluid Simulations of Ganymede's Magnetosphere
5.24pm			<i>Discussion</i>

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## TUESDAY

8.30am	21	Coates, Andrew	Electrons at Saturn's moons: selected CAPS-ELS results
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### SESSION 2 – Structure & Dynamics

8.44am	<b>22</b>	<b><i>Kivelson, Margaret G.</i></b>	<b><i>Magnetosphere: Structure and Dynamics</i></b>
9.09am	23	<i>Arridge, Chris</i>	<i>Observations of Plasma Sheet Structure and Dynamics</i>
9.34am	24	Perry, Mark E.	Cassini INMS Measurements of Ions and Neutrals in Saturn's Inner Magnetosphere
9.48am	25	Thomsen, Michelle F	Evidence at Saturn of an Inner Magnetospheric Convection Pattern, Fixed in Local Time
10.02am	26	Schippers, Patricia	Identification of field-aligned electric current systems in Saturn's inner magnetosphere

### 10.16-10.45am - Break

10.45am	27	<i>Brandt, Pontus C</i>	<i>Global Magnetospheric Dynamics of Jupiter and Saturn Revealed by ENA Imaging</i>
11.10am	28	Sergis, Nick	The Saturnian Ring Current
11.24pm	29	DiFabio, Robert	Variations of 3-220 keV/e Ions with Energy and L in Saturn's Magnetosphere
11.38pm	30	Kane, Mark	Hot Plasma Characteristics in the Outer Magnetosphere of Saturn
11.52pm	31	Paranicas, Chris	Particle energization at Saturn
12.06pm	32	Jackman, Caitriona M	Magnetotail reconnection and flux circulation: Jupiter and Saturn compared

### 12.20-1.45pm - Lunch

1.45pm 33 *Morooka, Michiko W. Dust and Low Temperature Plasma of Saturn*  
 2.10pm 34 *Kempf, Sascha Dust measurements with CDA on Cassini*  
 2.35am 35 *Cao, Hao The Intrinsic Magnetic Field of Saturn: A Special One or an Averaged One*  
 2.49pm *Discussion – including discussion of next MOP meeting.*

**3.30pm Break**

### **SESSION 3 – POSTERS**

**Poster titles are listed below in alphabetical order of first author. The number is the poster and abstract number. The posters are arranged by number (and topic) in the poster hall.**

- 127 **Achilleos**, Nicholas Self-sustaining Axial Asymmetries in the Thermosphere as a Driver of Rotational Periodicities in the Magnetosphere  
 77 **Ågren**, Karin Currents and Associated Electric Fields in Titan's Ionosphere  
 116 **Andrews**, David J Planetary period oscillations in Saturn's magnetosphere: Evidence in magnetic field phase data for rotational modulation of Saturn kilometric radiation emissions  
 111 **Arridge**, Chris Active Current Sheets in Saturn's Outer Magnetosphere  
 115 **Arridge**, Chris Plasma Populations in Saturn's High Latitude Magnetosphere and their Mapping to the Ionosphere  
 131 **Badman**, Sarah Cassini observations of ion and electron beams and their relationship to infrared auroral  
 100 **Bagenal**, Fran Comparative Planetary Magnetotails  
 101 **Bagenal**, Fran Jupiter's Plasmasheet: Voyager and Galileo Observations  
 134 **Bagenal**, Fran Anticipating Juno: Mission to Jupiter's Poles  
 125 **Bonfond**, Bertrand The multiple spots of the Ganymede footprint  
 117 **Brandt**, Pontus C In Search for a Self-consistent Hypothesis for Saturn's Periodicities: Shielding Effects of a Partial Ring Current  
 137 **Cecconi**, Baptiste Natural Radio Emission of Jupiter as Interferences for Radar Investigations of the Icy Satellites of Jupiter  
 132 **Corbin**, Benjamin Andrew High Resolution Spectrum Analysis of Jupiter's Lyman-alpha Bulge  
 113 **Delamere**, Peter Kelvin-Helmholtz Instability at Saturn's Magnetopause: Cassini Ion Data Analysis and Hybrid Simulation  
 88 **Dols**, Vincent Model of Io's Local Interaction: a Coupled MHD-Hall/Chemistry Model  
 82 **Dong**, Yaxue The water vapor plumes of Enceladus  
 76 **Edberg**, Niklas Structured Ionospheric Escape at Titan: RPWS/LP, MAG and ELS Measurements

- 80 **Fleshman**, Bobby L. The Roles of Dissociation and Velocity-Dependent Charge Exchange in Saturn's Extended Neutral Clouds
- 135 **Gladstone**, G. Randall The Ultraviolet Spectrograph (UVS) on Juno
- 94 **Grava**, Cesare Study On Post-Eclipse Brightening Of Io Sodium Cloud
- 112 **Hansen**, Kenneth The Michigan Solar WInd Model (mSWiM) Extended With STEREO A and B Data: Results and Validation
- 85 **Hendrix**, Amanda R Plasma-Surface Interactions at the Icy Saturnian Moons: UV Surface Effects
- 95 **Hess**, Sébastien Longitudinal modulation of hot electrons in the Io plasma torus.
- 103 **Hess**, Sébastien Model of the Jovian magnetic field topology constrained by the Io auroral emissions
- 96 **Higgins**, Chuck Long Term Analysis of Jupiter's DAM Sources
- 110 **Jackman**, Caitriona M Statistical properties of the magnetic field in the kronian magnetotail lobes and current sheet.
- 83 **Jones**, Geraint H. Surface charging of Saturn's moon Rhea
- 85 **Jones**, Geraint H. Electron signatures at Hyperion
- 92 **Kagitani**, Masato Variability of Io plasma torus in response to solar wind
- 109 **Kanani**, Sheila J A Survey of Atypical Injection Events in Saturn's Inner Magnetosphere
- 98 **Katoh**, Yuto Whistler-Mode Chorus Enhancements and Anisotropic Electrons in the Jovian Inner Magnetosphere
- 86 **Kimura**, Tomoki Non-MHD Aspects of Ganymede's Magnetosphere: Investigation of Wave-Particle Interaction Based on Multi-Instrumental Observations by Galileo
- 124 **Lamy**, Laurent Variability of SKR modulations and validity of the strobe-like picture
- 126 **Lamy**, Laurent Simultaneous multi-wavelength observations of Saturn's aurorae : energy budget and magnetospheric dynamics
- 90 **Matsuda**, Kazuya The Role of the Electron Convection Term for the Parallel Electric Field and Electron Acceleration in the Io-Jupiter System
- 133 **Melin**, Henrik Seasonal variability in the ionosphere of Uranus
- 99 **Misawa**, Hiroaki Solar Wind Response of Jupiter's Magnetosphere Viewed From Radio Spectrum Analyses
- 129 **Moore**, Luke Cassini End of Mission Model Predictions
- 128 **Nichols**, Jonathan Magnetosphere-ionosphere Coupling in Jupiter's Middle Magnetosphere: Computations Including a Self-Consistent Current Sheet Magnetic Field Model
- 78 **Paty**, Carol Initial Results: Coupling Eruptive Dynamics Models to Multi-fluid Plasma Dynamic Simulations at Enceladus
- 118 **Provan**, Gabby Dual periodicities in 'planetary period' magnetic field oscillations in Saturn's tail
- 122 **Pryor**, Wayne R. Cassini UVIS Observations of Varying Auroral Emissions on Saturn's Night Side
- 120 **Radioti**, Aikaterini Auroral signatures of injections in the magnetosphere of Saturn

- 89 **Retherford**, Kurt D Io's Extended Atmosphere Observed with New Horizons Alice
- 107 **Roussos**, Elias Modeling of Energetic Proton Profiles at Saturn
- 87 **Schneider**, Nick Initial Modeling of a New High-Speed Atmospheric Ejection Process at Io
- 136 **Sittler**, Edward Charles Plasma IMS Composition Measurements for Europa, Ganymede, and the Jovian System
- 121 **Sonnabend**, Guido Studies of the Infrared Aurora by Very High-Resolution Spectroscopy of Stratospheric Trace Species
- 123 **Stallard**, Tom Comparing the region of Solar Wind influence in Jupiter's auroral region with current magnetospheric models.
- 104 **Steffl**, Andrew J. Energetic Electrons in the Jovian Magnetosphere Detected by the Alice UV Spectrograph Aboard New Horizons
- 114 **Szego**, Karoly Investigation of the low latitude outer magnetosphere of Saturn using ion data measured by the Cassini Plasma Spectrometer
- 130 **Tao**, Chihiro North-South asymmetry of Saturn magnetosphere-ionosphere coupling system
- 79 **Taubenschuss**, Ulrich Observational evidence for a conversion of upper hybrid resonances into electromagnetic modes at the Enceladus plasma torus
- 91 **Trafton**, Laurence M. Discovery of an Unidentified Emission Band in Io's Eclipse Spectrum
- 106 **Tseng**, Wendy The Hydrogen Atoms in the Saturnian Magnetosphere
- 97 **Tsuchiya**, Fuminori Short-term Changes in Jupiter's Synchrotron Radiation Caused by Enhanced Radial Diffusion Driven by Solar UV/EUV Heating
- 138 **Tsuchiya**, Fuminori Plan for Observing Magnetospheres of Outer Planets by Using the EUV Spectrograph Onboard the SPRINT-A/EXCEED Mission
- 102 **Uno**, Takeru Investigation of Jovian Thermospheric Temperature by the Observation of H<sub>2</sub> and H<sub>3</sub><sup>+</sup> Auroral Emission
- 105 **Vasyliunas**, Vytenis M Global Stress Balance of the Jovian Magnetotail
- 119 **Vogt**, Marissa F. Simulating the effect of rapid rotation on the local time dependence of Jupiter's plasma sheet thickness
- 108 **Wilson**, Rob J Saturn's Magnetosphere: Cassini CAPS Observations
- 93 **Yoneda**, Mizuki Io's volcanic effect on Jupiter's magnetospheric activity
- 81 **Zastrow**, Mark Upper limits on Enceladus' airglow emission

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**WEDNESDAY**

**SESSION 4 – Saturn’s Rotation/Periodicity**

8.30am	36	<i>Lamy, Laurent</i>	<i>Saturn's rotation</i>
8.55am	37	<i>Provan, Gabby</i>	<i>The chiming of Saturn's magnetosphere at planetary periods.</i>
9.20am	38	Tseng, Wendy	Time Variability of the Saturn's Ring Atmosphere and Ionosphere
9.34am	39	Andrews, David J	Saturn's magnetic equinox: results from a survey of the amplitude and phase of dual-period magnetic field oscillations using Cassini data.
9.48am	40	Ramer, Katherine M	Plasma and Magnetic Periodicities in Saturn's Equatorial Ring Current
10.02am	41	Carbary, James	Periodicities in Saturn's ENA and their Correlation with SKR

**10.16-10.45am - Break**

10.45am	42	Rymer, Abigail	Saturn's Magnetospheric Period.
10.59am	43	Mitchell, Donald	Saturn's 10.8 Hour Periodicity - Relationship Between Cold, Sub-corotating Plasma and Hot Ring Current Particles
11.13am	44	Southwood, David	Post-Equinox Saturn Magnetic Rotation
11.27pm	45	Jia, Xianzhe	An Atmospheric Vortex as the Driver of Saturn's Electromagnetic Periodicities: 1. Global Simulation
11.41pm	46	Kivelson, M. G.	An Atmospheric Vortex as the Driver of Saturn's Electromagnetic Periodicities: 2. Magnetospheric and Ionospheric Responses
11.55pm	47	Khurana, Krishan K	A Magnetospheric Vortex as the Source of Periodicities in Saturn's Magnetosphere
12.09pm	48	Vasyliunas, Vytenis M	Periodicities in Saturn's Magnetosphere: An Example of Murphy's Law?

**12.23-2.00pm – Lunch**

**2.00pm FREE TIME / EXCURSIONS**

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**THURSDAY**

**SESSION 5 – Aurora**

8.30am	49	<i>Gerard, Jean-Claude M. C.</i>	<i>Aurora : Global Features</i>
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- 8.55am 50 *Clarke, John T The Response to the Solar Wind of the Jovian and Saturnian Auroras*
- 9.20am 51 **Hess, Sebastien** *Aurora - Micro Processes*
- 9.34am 52 Zarka, Philippe Saturation of Cyclotron Maser Instability in Jupiter's Radiosources ?
- 9.48am 53 Kopf, Andy A statistical study of kilometric radiation fine structure striations observed at Jupiter and Saturn
- 10.02pm 54 Bonfond, Bertrand Inside the Jupiter Main Auroral Emissions: Flares, Spots, Arc...and Satellite Footprints?

**10.16-10.45am - Break**

- 10.45am 55 *Badman, Sarah Cassini VIMS Observations of Saturn's Infrared Aurora*
- 11.10am 56 Dyudina, Ulyana Saturn's North and South aurora observed by Cassini camera in visible wavelengths
- 11.24am 57 Melin, Henrik Simultaneous infrared and ultraviolet observations of Saturn's aurora using Cassini VIMS and UVIS
- 11.38am 58 Grodent, Denis Grapes from Saturn : focus on Saturn's main ring of emission with Cassini-UVIS
- 11.52am 59 Krupp, Norbert Open-Closed Field Line Boundary Characterization of Saturn's Magnetosphere Using Cassini MIMI-LEMMS Data And Auroral Observations From HST And Cassini-UVIS

**12.06-1.45pm - Lunch**

- 1.45pm 60 *Ozak, Nataly Auroral X-ray Emission at the Outer Planets*
- 2.10pm 61 Vogt, Marissa F. Mapping Jupiter's auroral features to magnetospheric sources: Comparing results from three different models for Jupiter's ionospheric magnetic field
- 2.24pm 62 Higgins, Chuck Jupiter's Radio Rotation Period: A 50-year Average
- 2.38pm *Discussion*

**3.00pm - Break**

**SESSION 6 - POSTERS / ROTATION WORKSHOP**

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**FRIDAY**

**SESSION 7 - Workshops on Modeling**

**8.30-10.00am**

**10.00-10.30am - Break**

## **SESSION 8 – Atmosphere-Ionosphere/Structure/Dynamics**

- 10.30am 63 **Galand, Marina** *Neutral Atmosphere - Ionosphere - Magnetosphere Coupling*
- 10.55am 64 *Achilleos, Nicholas* *The role of the atmosphere in ionosphere-magnetosphere coupling*
- 11.20am 65 Chané, Emmanuel The MI-coupling in global simulations of the Jovian and Kronian magnetospheres
- 11.34am 66 Yates, Japheth Nesta Influence of Upstream Solar Wind on Thermospheric Flows at Jupiter
- 11.48pm 67 Ray, Licia C Current - Voltage Relationships in the Saturnian System
- 12.02am 68 Steffl, Andrew J. The Io Plasma Torus During the Cassini Flyby of Jupiter
- 12.16am 69 Dessler, Alex Dawn-Dusk Oscillation of Jupiter's Io Torus and the Vasyliunas E-V Theorem

### **12.30-1.30pm – Lunch**

- 1.30pm 70 Desroche, Mariel The Interaction Between the Solar Wind and Jupiter's Magnetosphere
- 1.44pm 71 Ye, Shengyi Jovian anomalous continuum radiation
- 1.58pm 72 Lai, Hairong No Evidence for Erosion of the Saturn Magnetopause by Northward IMF
- 2.12pm 73 Liu, Xin The growth of plasma convection in Saturn's inner magnetosphere
- 2.26pm 74 DeJong, Anna Field-Aligned Currents Associated with Interchange Injection at Saturn
- 2.40pm 75 *Hansen, Kenneth* *Modeling of Large-scale systems: The Magnetospheres of Jupiter and Saturn*

### **3.05-3.30pm Break**

- 3.30pm *Discussion of future missions*

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***End of MOP 2011!***