**Notional Mercury Exosphere - Magnetosphere Coupling Workshop Sessions**

**MESSENGER – BepiColombo Workshop, Nov. 2-5, 2010**

### Day 1 – Tuesday, November 2

8:15-8:30 a.m.  Welcome

**Session 1. Magnetospheric Observations**

1.1. Planetary Magnetic Field Observations & Theory

8:30-9:10 a.m.  Haje Korth (Invited), *Magnetospheric Magnetic Field Observations and Modeling at Mercury*

9:10-9:30 a.m.  Haje Korth (Contributed), *Mercury’s Magnetospheric Response to the Dynamics of the Space Environment*

1.2. Plasma & Energetic Particles Observations

9:30-10:10 a.m.  Dan Baker (Invited), *Substorms at Mercury: Old Questions and New Insights*

10:10-10:30 a.m.  **Break**

10:30-11:10 a.m.  Dominique Delcourt (Invited), *Magnetospheric Charged Particle Observations and Modeling at Mercury*

11:10-11:30 a.m.  Jim Raines (Contributed), *MESSENGER Observations of the Composition of Mercury’s Ionized Exosphere and Plasma Environment*

11:30-12:30 p.m.  Menelaos Sarantos (Invited), *Planetary Pickup Ions at Mercury*

12:30-1:20 p.m.  **Lunch**

1:20-1:40 p.m.  George Ho (Contributed), *Observations of Suprathermal Electrons in Mercury’s Magnetosphere During the Three MESSENGER Flybys*

1:40-2:00 p.m.  Jim Raines (Contributed), *MESSENGER Observations of the Plasma Environment Near Mercury*

### Session 2. Exospheric Observations

2.1. Ground Measurements

2:00-2:40 p.m.  Rosemary Killen (Invited), *Overview of Ground Based Observations of the Exosphere*

2:40-3:00 p.m.  François Leblanc (Contributed), *Energetic Characterization of Mercury’s Exospheric Sodium Component*

3:00-3:20 p.m.  **Break**

3:20-3:40 p.m.  Valeria Mangano (Contributed), *A Statistical Study of Sodium Intensity and Dynamics in The Exosphere of Mercury*

3:40-4:00 p.m.  Rosemary Killen (Contributed), *Long-Term Supply of Volatiles and Refractories to the Exosphere of Mercury*

2.2. Space-Based Measurements

4:00-4:40 p.m.  Ron Vervack (Invited), *MESSENGER’s Flybys of Mercury: Three Glimpses into the Workings of a Complex Exospheric System*

4:40-5:00 p.m.  Carl Schmidt (Contributed), *Observations of Tail Structures at Mercury with the STEREO Spacecraft*

5:00 p.m.  **Welcoming Reception – LASP Mission Operations Lobby**


Day 2 – Wednesday, November 3

Session 3. Surface Interactions

3.1. Photon Stimulated Desorption
8:00-8:40 a.m. Boris Yakshinskiy (Invited), Electron and Photon Stimulated Desorption of Alkali atoms from Mineral Surfaces

3.2. Sputtering and Backscattering
8:40-9:20 a.m. Peter Wurz (Invited), The Combined Effect of Physical and Chemical Processes on the Release of Particles into the Exosphere
9:20-10:00 a.m. Thomas Orlando (Invited), Stimulated Desorption of Silicates: A Potential Source for Ions in Mercury's Space Environment
10:00-10:20 a.m. Todd Smith (Contributed), Facilitating Mercury Surface Process and Exosphere Generation Research
10:20-10:40 a.m. Break

3.3. Micrometeoroid Bombardment
10:40-11:00 a.m. Matt Burger (Contributed), Impact Vaporization at Mercury: Limits from the MASCS Data

3.4. Chemistry and Space Weathering
11:00-11:40 p.m. Karl Hibbitts (Invited), Solar Powered Water and Hydroxyl on Mercury
11:40-12:00 p.m. Ann Sprague (Contributed), Exploring New Views of Mercury’s Exosphere and Surface
12:00-1:00 p.m. Lunch
1:00-1:20 p.m. Deborah Domingue (Contributed), Space Weathering on Mercury

3.5. Dust and Surface Charging
1:20-2:00 p.m. Tim Stubbs (Invited), A Comparison Between Surface Charging and Dust Transport Processes at the Moon and Mercury
2:00-2:20 p.m. Sho Sasaki (Contributed), Measurement of Dust Environment around Mercury by MDM (Mercury Dust Monitor) on Board MMO Bepi Colombo

Session 4. Exospheric Models and Processes

4.1. Atmospheric Models
2:20-3:00 p.m. Alex Mura (Invited), Particle and Chemical Sputtering as a Source for the Exosphere of Mercury: Modeling and Data Comparison
3:00-3:20 p.m. Break
3:20-4:00 p.m. François Leblanc (Invited), Mercury Exosphere, Global Circulation Model of its Sodium Component
4:00-4:40 p.m. Shingo Kameda (Invited), Loss of Mercury's Exospheric Sodium
4:40-5:00 p.m. Menelaos Sarantos (Contributed), Implications of MESSENGER Observations for Models of Exospheric Magnesium
5:00-5:20 p.m. Matt Burger (Contributed), Calcium in Mercury’s Exosphere: Modeling MESSENGER Data
**Day 3 – Thursday, November 4**

**Session 5. Plasma Processes**

5.1. K-H Boundary Waves

8:30-9:10 a.m. Masaki Fujimoto (Invited), *Ion Kinetic Effects on the Mercury-like Ion Kinetic-Scale Velocity Shear Layer with/without Heavy Ions*

5.2. Magnetic Reconnection

9:10-9:30 a.m. Jim Slavin (Contributed), *MESSENGER Observations of Reconnection and Its Effects on Mercury’s Magnetosphere*

5.3. Electrodynaminc Interactions

9:30-10:10 a.m. Lars Blomberg (Invited), *Magnetospheric Electric Fields at Mercury*

10:10-10:30 a.m. Wladislaw Lyatsky (Contributed), *Alfen Wave Reflectance Model for Field-aligned Currents at Mercury*

10:30-10:50 a.m. Break

5.4. Wave Particle Interactions & ULF Waves

10:50-11:30 a.m. Toshi Nishimura (Invited), *Direct Measurements of the Poynting Flux Associated with Convection Electric Fields*

11:30-11:50 a.m. Scott Boardsen (Contributed), *Quasi-Periodic ~20–30-s Oscillations in Mercury’s Inner Magnetosphere During Steady Southward IMF*

11:50-12:10 p.m. Vadim Uritsky (Contributed), *Understanding Multiscale Transients in Mercury’s Plasma Environment under Northward IMF Condition: Data Analysis Tools and First Results*

12:10-12:30 p.m. Scott Boardsen (Contributed), *Bursts of Narrow-Band Magnetospheric Waves near the He+ to H+ Cyclotron Frequencies Observed During MESSENGER’s Mercury Flybys*

12:30-1:30 p.m. Lunch

**Session 6. Mercury Global Simulations**

6.1. MHD Simulations

1:30-2:10 p.m. Robert Winglee (Invited), *Global Modeling of Mercury’s Magnetosphere*

2:10-2:30 p.m. Mehdi Benna (Contributed), *Modeling of Mercury’s Pick-up Ion Dynamics and its Response to Changes in IMF Conditions*

2:30-2:50 p.m. Alex Glocer (Contributed), *Three Dimensional MHD Modeling of Mercury’s Magnetosphere During ICMEs*

2:50-3:10 p.m. Break

6.2. Hybrid Simulations

3:10-3:50 p.m. Y-C Wang (Invited), *Exospheric and Magnetospheric Responses to Large Solar Wind Disturbances*

3:50-4:10 p.m. Pavel Travnicek (Contributed), *Ion Foreshock and Magnetosheath Properties in Global Hybrid Simulations of Mercury's Magnetosphere*

6.3. Surface Precipitation & Sputtering Maps

4:10-4:30 p.m. David Schriver (Contributed), *Electron Transport and Precipitation at Mercury During the MESSENGER Flybys*

**Science Dinner – Red Lion Restaurant** (http://www.redlionrestaurant.com/)

5:45 p.m. Transportation to the Red Lion (leaving from the Millennium Hotel)

6:00 p.m. Reception – Gazebo Room

6:45 p.m. Dinner
Day 4 – Friday, November 5

7. Summary

   Atmospheric Reporter
   Magnetospheric Reporter
   MESSENGER & BepiColombo Leadership Panel

Posters:

Emmanuel Grotheer, *HEMO – The Hermean Exosphere Model of Oxygen: A Comprehensive Model for Interpreting Data from the MESSENGER and BepiColombo Missions to Mercury*

Ariah Kidder, *Reconnection Events and Sodium Morphology at Mercury*

Susan McKenna-Lawlor, *Mercury’s Magnetosphere in Response to Elevated, Prolonged, Solar Activity in December, 2006: Hybrid Modeling Results*

Helen Middleton, *BepiColombo - Hermean Environment Instrument Science Operation Planning*

Andrew Potter, *Sodium Velocity Maps on Mercury*

Mea Simon Wedlund, *Monte Carlo Modelling of Neutral Hydrogen in the Exosphere of Mercury*