Thursday, March 22, 2012
POSTER SESSION II: PLANETARY MISSION CONCEPTS
6:00 p.m. Town Center Exhibit Area

Szatkowski G. P.
ULA Rideshare to Support Lunar and Planetary Missions **[#1149]**
This provides the rideshare capabilities for EELVs. Details will be provided; launch operations; development schedules; and launch opportunities. Concept delivery missions using Rideshare will be suggested for the Moon, Mars, and NEOs.

Szentesi J.
Electro-Magnetic Propulsion System (EMPS) for Spacecrafts and Satellites **[#1202]**
The electro-magnetic propulsion system (EMPS) for driving satellites and other spacecraft has smaller mass, smaller volume, and more efficiency compared with the known systems applied in space technology.

Klesh A. T. Castillo-Rogez J. C.
Applicability of Nanosatellites to Deep Space Exploration **[#2326]**
We present recent work on the use of secondary nanospacecraft on deep space missions to provide in situ measurements in risky and inhospitable locations, including high science/high risk sites, like cometary vents, Enceladus' jets, and Io's volcanos.

Allton J. H. Allen C. C. Burkett P. J. Calaway M. J. Oehler D. Z.
Toward Lower Organic Environments in Astromaterial Sample Curation for Diverse Collections **[#2439]**
Changes in organic contamination control and monitoring at Johnson Space Center Astromaterials curation facilities, from Apollo to Hayabusa, are documented to support improvements for the diverse collections and future sample return missions.

McNutt R. L. Jr. Solomon S. C. Anderson B. J. Blewett D. T. Evans L. G. Gold R. E.
Murchie S. L. Nittler L. R. Phillips R. J. Prockter L. M. Slavin J. A. Vervack R. J. Jr.
Zuber M. T. MESSENGER Team
MESSENGER's Extended Mission **[#2422]**
MESSENGER is completing its primary one-year mission at Mercury. It has been selected for a one-year-long extension by NASA. We give an overview of the extended-mission science questions and the plans for carrying out the required observations.

Choo T. H. Perry M. E. Steele R. J. Nair H. Nguyen L. Skura J. F. Lucks M.
Bedini P. D. Solomon S. C.
SciBox and Observation Planning for MESSENGER's Extended Mission at Mercury **[#1262]**
The MESSENGER spacecraft will begin its extended mission in March 2012 for one Earth year. The MESSENGER team has used SciBox software to rapidly develop a 12-month science observation packed operation schedule.

Stickle A. M. Banks M. E. Benecchi S. D. Bradley B. K. Budney C. J. Clark G. B. Corbin B. A.
James P. B. Kumar K. O'Brien R. C. Rivera-Valentin E. G. Saltman A. Schmerr N. Seubert C. R.
Siles J. V. Stockton A. M. Taylor C. Zanetti M.
VULCAN: A Concept Study for a New Frontiers-Class Venus Lander **[#1939]**
VULCAN is a concept study for a New Frontiers mission to Venus to analyze atmospheric and surface composition. The mission would provide ~1 hr of atmospheric descent data and ~2 hrs of surface measurements, including detailed imaging and chemistry.

Schmidt G. R. Landis G. A. Oleson S. R.
HERRO Missions to Mars and Venus using Telerobotic Surface Exploration from Orbit **[#1543]**
This paper presents concepts for human missions to the orbits of Mars and Venus that feature direct robotic exploration of the planets' surfaces via teleoperation from orbit.

Raftery M. Hoffman J. Klaus K.
International Space Station as an Exploration Platform for Deep Space **[#1448]**
We will introduce concepts for how ISS could be fully utilized to support exploration. Pressure on program budgets will only intensify the need to use existing assets to their fullest extent. Meaningful progress on exploration can be made using ISS.

Lester D. Klaus K. Hodges K. Ower C. Jasiobedzki P.
On-Orbit Telerobotics as a Strategy for Lunar Exploration **[#1417]**
On-orbit telerobotic control is a strategy for near-term lunar exploration, allowing astronauts near the Moon, ideally at EM L1/L2, low-latency control of surface assets. It provides real telepresence, and is highly extensible to other destinations.

Carmona Reyes J. A. Peters S. Herdrich G. Srama R. Schmoke J. Cook M. Matthews L. Laufer R. Hyde T. W.
Multi Wall Carbon Nano Tubes as Material for a Space Elevator on the Moon **[#2106]**
In order to determine the effects that plasma has on Carbon Nano Tubes (CNTs), a gaseous electronics conference reference cell (GEC reference cell) is employed to investigate how they react under varying plasma environments.

Eubanks T. M.
Sample Return from Shackleton Crater with the Deep Space Tether Pathfinder (DSTP) **[#2870]**
The Deep Space Tether Pathfinder (DSTP), a 5000 km rotating tether, will demonstrate the scientific utility of planetary scale tethers by collecting and returning a surface sample from the floor of Shackleton Crater near the lunar south pole.

Vondrak R. R. Keller J. W. Chin G. Garvin J. B. Rice J. W. Petro N. E.
The Lunar Reconnaissance Orbiter: Plans for the Extended Science Phase **[#1931]**
Update of the Lunar Reconnaissance Orbiter mission detailing plans for the extended science phase.

Carpenter J. D. Fisackerly R. Pradier A. Houdou B. De Rosa D. Gardini B.
Science and Payload Activities in Support of the ESA Lunar Lander **[#1990]**
We report on the status of the ESA Lunar Lander mission, emphasizing related science and payload activities.

Látos T. Deák M. Bérczi Sz.
Landing Site Modelling for the Puli/Hunveyor-15 Lunar Rover Prototype **[#1748]**
The Team Puli Space first GLXP rover tests on the new ground-modeling table.

Stern S. A. Gladstone G. R. Horanyi M. Kutter B. Goldstein D. B. Tapley M.
Synthetic Lunar Atmosphere Experiments and Base Resupply Mission Concept **[#1008]**
We describe a mission concept called SLAM to generate temporary, artificial lunar atmospheres for experimentation. This concept also has important applications to supplying water to lunar outposts.

Crites S. Quintana S. Przepiórka A. Santiago C. Trabucchi T. Kring D. A.
Lunar Landing Sites that will Enhance our Understanding of Regolith Modification Processes **[#1086]**
As part of the LPI-JSC 2011 Lunar Exploration Summer Intern Program we conducted a global survey of the Moon to identify possible mission landing sites where regolith processes and weathering on anhydrous airless bodies could be studied.

Quintana S. Crites S. Przepiórka A. Santiago C. Trabucchi T. Kring D. A.
Moscoviense Basin: A Landing Site to Study Science Goals Associated with Lunar Regolith Processes and Space Weathering **[#1215]**
Moscoviense Basin represents an exceptional site to study lunar regolith processes, including space weathering. The site proposed here provides access to a fresh crater, a lunar swirl, and both mare and highland surfaces, all within a 20 km radius.

Przepiórka A. Crites S. Quintana S. Santiago C. Trabucchi T. Kring D. A.
Tycho Crater: A Potential Landing Site to Study a Diversity of Regolith Processes and Space Weathering **[#1387]**
The paper describes the potential landing site on the Moon, Tycho Crater, where four goals identified in the NRC 2007 report can be addressed. The work was produced during the 2011 LPI-JSC Lunar Exploration Summer Intern Program.

Trabucchi T. Crites S. Przepiórka A. Quintana S. Santiago C. Kring D. A.
Identifying Regions of Interest Needed to Characterize the Diverse Physical Properties of the Lunar Regolith **[#1679]**
In the NRC 2007 report, Science Goal 7b states: "Determine the physical properties of the regolith at diverse locations of expected human activity." To respond to this goal we prioritized regions of interest on the Moon to defined potential landing sites.

Roberts C. E. Blair D. M. Lemelin M. Nowka D. Runyon K. D. Paige D. A.
Spudis P. D. Kring D. A.
The Potential for Volatiles in the Intercrater Highlands of the Lunar North Pole **[#1371]**
A mission concept for volatile exploration in the intercrater polar highlands near the lunar north pole.

George J. A. Mattes G. W. Rogers K. N. Magruder D. F. Paz A. J. Vaccaro H. M. Baird R. S.
Sanders G. B. Smith J. T. Quinn J. W. Larson W. E. Colaprete A. Elphic R. C. Suaris T. R.
RESOLVE Mission Architecture for Lunar Resource Prospecting and Utilization **[#2583]**
Design Reference Mission 2.2 is presented for proposed flight of the RESOLVE payload for lunar resource groundtruth and utilization. The rover/payload deploys on a ten day surface mission to the Cabeus Crater near the lunar south pole in May of 2016.

Tanaka S. Mitani T. Iijima Y. Otake H. Ogawa K. Kobayashi N. Hashimoto T. Otsuki M.
Kimura J. Kuramoto K.
Overview of Candidate Instruments On Board the Lunar Lander Project SELENE-2 **[#1651]**
We report on the updated status of investigation and development of candidate instruments onboard the SELENE-2 lunar landing mission.

Garrick-Bethell I. Lin R. Sanchez H. Hemingway D.
Lunar Swirl Impactors: A Low-Cost Mission to Study Swirls, Magnetism, Water, Space Weathering, Dust, and Plasma Physics **[#2650]**
Releasing several cubesat probes into the heart of Reiner Gamma swirl can address a number of open problems in lunar science for very low cost.

Clark P. E. Cox R. Vassant A. Scharfstein G.
LunarCube: A Concept for Advancing Solar System Exploration **[#1123]**
We propose LunarCube, an extension of the affordable and successful CubeSat approach to facilitate access to the Moon. CubeSat has already encouraged and increased access to Earth orbital space over the last five years.

Clark P. E. Rilee M. L. Curtis S. A. Bailin S.
Evolving a Method to Capture Science Stakeholder Inputs to Optimize Instrument, Payload, and Program Design **[#1124]**
We are developing Frontier, a highly adaptable, stably reconfigurable, web-accessible intelligent decision engine capable of optimizing design as well as the simulating operation of complex systems in response to evolving needs and environment.

Chicarro A. F.
MNSM — A Future Mars Network Science Mission **[#1066]**
A Mars Network Science Mission of several surface stations is being studied by ESA, to investigate the interior of the planet, its rotational parameters and its atmospheric dynamics, which have not been fully addressed by previous Mars exploration.

Murchie S. L. Chabot N. L. Yen A. S. Arvidson R. E. Maki J. N. Trebi-Ollennu A. Wang A. Gellert R. Daly M. Rivkin A. S. Seelos F. P. Eng D. Guo Y. Adams E. Y.
MERLIN: Mars-Moon Exploration, Reconnaissance and Landed Investigation **[#2569]**
MERLIN, an orbital and landed investigation of Deimos, would begin landed robotic exploration of Mars' moons and of D-type bodies, and collect information valuable to the planning of future human exploration of the Mars system.

Blaney D. L. Staehle R. L. Betts B. Friedman L. Hemmati H. Lo M. Mouroulis P. Pingree P. Puig-Sauri J. Svitek T. Wilson T.
Interplanetary CubeSats: Small, low cost Missions Beyond low Earth Orbit **[#1868]**
Interplanetary CubeSats provide a platform for small low-cost missions beyond low-Earth orbit. The initial mission studied is an asteroid flyby with a small compact imaging spectrometer.

McCarthy J. F.
A Low Cost Approach to Close-Up Examination of Multiple Near Earth Asteroids **[#1016]**
A mission concept combining a small, inexpensive, but capable solar electric propulsion spacecraft with low cost launch vehicles to provide close-up examination of multiple near Earth asteroids within the cost cap of NASA's Discovery program.

Straub J. Fevig R. Borzych T. Church C. Holmer C. Komus A. Perrin T.
NEOSat: An Architecture for Small Interplanetary Craft Development **[#2797]**
Earth impactors may present the greatest natural threat to the Earth and its inhabitants. This paper describes a precursor mission at the University of North Dakota to test and validate technologies required for assessment of a near Earth object.

Bernal J. A. Wegel D. C. Nuth J. A. III
Harpoon-Based Sample Acquisition System **[#1182]**
A way to acquire core samples from low-gravity objects without the need for landing gear.

Barucci M. A. Michel P. Cheng A. Böhnhardt H. Brucato J. R. Dotto E. Ehrenfreund P. Franchi I. A. Green S. F. Lara L. -M. Marty B. Koschny D.
MarcoPolo-R: Near Earth Asteroid Sample Return Mission Selected for ESA Assessment Study Phase **[#1457]**
MarcoPolo-R is a sample return mission to a primitive near-Earth asteroid (NEA) selected in February 2011 for the assessment study phase at ESA in the framework of ESA's Cosmic Vision 2 program. MarcoPolo-R is a European-led mission with a proposed NASA contribution.

Klaus K. Lawrence S. .J. Elsperman M. S. Smith D. B. Horsewood J.
Innovative Stratiges for Asteroid Precursor Exploration **[#1441]**
We support technology advances to reduce the cost and increase the flight rate of planetary missions, while actively developing a scientific and engineering workforce to achieve national space objectives. This is a low-cost asteroid mission concept.

Smith D. B. Klaus K. Behrens J. Bingaman G. Elsperman M. Horsewood J.
Trojan Tour Enabled by Solar Electric Based Mission Architecture **[#2632]**
To the greatest extent possible, we will utilize the PS Decadal Trojan concept as a basis for examining the feasibility of a Solar Electric Propulsion (SEP) mission using a Boeing bus and Advanced Modular Power System (AMPS) solar power generation.

Nahm A. L. Potter S. L. Sayanagi K. M. Diniega S. Gil S. Balcerski J. Carande B. Diaz-Silva R. Fraeman A. A. Hudson J. S. Guzewich S. D. Livi R. Route M. Urban K. D. Vasisht S. Williams B. Budney C. J. Lowes L. L.
TASTER: Trojan ASteroid Tour, Exploration, and Rendezvous, a JPL Planetary Science Summer School Mission Design Exercise **[#2857]**
We present a mission concept to explore Trojan asteroids recommended by the Planetary Science Decadal Survey as target candidates for a future New Frontiers class mission.

Dougherty M. Grasset O. Erd C. Titov D. Bunce E. Coustenis A. Blanc M. Coates A. Drossart P. Fletcher L. Hussmann H. Jaumann R. Krupp N. Prieto-Ballesteros O. Tortora P. Tosi F. Van Hoolst T.
JUpiter ICy moons Explorer (JUICE): An ESA L-Class Mission Candidate to the Jupiter System **[#1806]**
JUICE is the next step for an in-depth exploration of the geophysical and environmental characteristics of Ganymede and exploration of Callisto and Europa, and will provide an in-depth understanding of Jupiter's atmosphere and magnetosphere.

Pappalardo R. T. Bagenal F. Barr A. C. Bills B. G. Blaney D. L. Blankenship D. D. Brinckerhoff W. Connerney J. E. P. Hand K. Hoehler T. Kurth W. McGrath M. Mellon M. Moore J. M. Prockter L. M. Senske D. A. Shock E. Smith D. E. Gavin T. Garner G. Magner T. Cooke B. C. Crum R. Mallder V. Adams L. Klaasen K. Patterson G. W. Vance S.
Mission Concepts for Exploring Europa's Habitability **[#1714]**
The Europa Science Definition Team reports on its study of three Europa mission concepts: a Europa orbiter, a Europa multiple-flyby mission, and a Europa lander.

Noll K. S. Simon-Miller A. A. Wong M. H. Choi D. S.
JESTR: Jupiter Exploration Science in the Time Regime **[#2007]**
We describe a mission concept for a dedicated space telescope designed to observe Jupiter at diffraction-limited resolution over a two-year mission. The small-scale sources of Jupiter's large-scale circulation will be studied in unprecedented detail.

Simon-Miller A. A. Lunine J. I. Atreya S. K. Spilker T. R. Coustenis A. Atkinson D. H. Colaprete A. Reh K.
Scientific Value of a Saturn Atmospheric Probe Mission **[#1114]**
A shallow Saturn probe mission can obtain the key noble gas and isotopic abundances, plus vertical abundance profiles for other constituents, critical to enabling a full comparison of composition and dynamical processes on Jupiter and Saturn.

Cabrol N. A. Grin E. A. Haberle C. Moersch J. E. Jacobsen R. E. Sommaruga R. Fleming E. D. Detweiler A. M. Echeverria A. Blanco Y. Rivas L. A. Pedersen L. Smith T. Wettergreen D. S. Demergasso C. Parro V. Fong T. Bebout L.
Planetary Lake Lander: Using Technology Relevant to Titan's Exploration to Investigate the Impact of Deglaciation on Past and Present Planetary Lakes **[#2147]**
The Planetary Lake Lander project deploys and remotely operates a lake lander to gain operational experience for future lake lander missions. Its scientific mission in the Chilean Andes is focused on the study of deglaciation.

Benfield M. P. J. Hakkila J. Blevins E. R. Turner M. W. Farrington P. A. Runyon C. J.
Cronus and Oceanus — Two Undergraduate Titan Lake Lander Mission Concepts **[#1660]**
Two student concepts for a Titan Lake Lander Mission.