

2020 Conference on Advanced Power Systems for Deep Space Exploration

***Times are listed as Eastern Daylight Savings (EDT) (USA and Canada)**

DAY 1			DAY 2			DAY 3		
Tuesday, 27 October 2020			Wednesday, 28 October 2020			Thursday, 29 October 2020		
10:00 - 10:05	Conference Introduction and Review of Conference Logistics Dr. Erik Brandon, Jet Propulsion Laboratory, California Institute of Technology		10:00 - 10:05	Conference Introduction and Review of Conference Logistics Dr. Erik Brandon, Jet Propulsion Laboratory, California Institute of Technology		10:00 - 10:05	Conference Introduction and Review of Conference Logistics Dr. Erik Brandon, Jet Propulsion Laboratory, California Institute of Technology	
10:05 - 10:35	Keynote: The Future Missions of NASA's Planetary Science Division, Mr. Eric Ianson, NASA Headquarters		10:05 - 10:35	Keynote: A Fast Exit Out of the Solar System, Dr. Louis Friedman, Planetary Society - Emeritus		10:05 - 10:35	Keynote: Power Requirements for an Interstellar Probe, Dr. Ralph McNutt, Johns Hopkins University Applied Physics Laboratory	
10:35 - 10:40	Transition to two tracks		10:35 - 10:40	Transition to two tracks		10:35 - 10:40	Transition to two tracks	
	Track 1: Power Systems and New Power System Architectures Session Chair: Dr. Christopher Iannello, NASA Engineering & Safety Center	Track 2: Power Sources Session Chair: Mr. Jeremiah McNatt, NASA Glenn Research Center		Track 1: Energy Storage Session Chair: Dr. Will West, Jet Propulsion Laboratory, California Institute of Technology	Track 2: Power Conversion and Power Switching Electronics Session Chair: Dr. Geoffrey Landis, NASA Glenn Research Center		Track 1: Energy Storage Session Chair: Dr. James Wu, NASA Glenn Research Center	Track 2: Power Sources Session Chair: Dr. Terry Hendricks, Jet Propulsion Laboratory, California Institute of Technology
10:40 - 11:05	Direct-Drive Architecture for Solar Electric Propulsion Mr. Jean-Baptiste De Boissieu, Thales Alenia Space	Europa Clipper PVA Electrical Design Mr. René Simon, Airbus Defence and Space	10:40 - 11:05	Degradation Model and State Estimation for Lithium-Ion Batteries in Aerospace Ms. Linda Bolay, German Aerospace Center (DLR)	A Holistic Approach to Radiation-Hardened PWM Controller IC Development Mr. David Grant, Apogee Semiconductor, Inc.	10:40 - 11:05	Update on Li/CFx Primary Cell Testing for Space Applications Ms. Jessica Seong, Jet Propulsion Laboratory, California Institute of Technology	European Radioisotope Power Systems Program: Recent Developments Prof. Richard Ambrosi, University of Leicester
11:05 - 11:30	Space Power Consortium: A New Standards Organization for Next Generation Spacecraft Power Systems Mr. Timothy Meade, Cobham Advanced Electronic Solutions	Development of SolAero's Solar Cell, Laser Power Converter, and Thermophotovoltaic Technologies Dr. Clay McPheeters, SolAero Technologies	11:05 - 11:30	Commercial Li-Ion Cell Strategic Reserve Dr. Eric Darcy, NASA Johnson Space Center	EPC of the MetOp-SG High Power Amplifier Dr. Panagiotis Potamianos, Airbus Defence and Space GmbH	11:05 - 11:30	Liquefied Gas Electrolytes for Low Temperature Electrochemical Energy Storage Dr. Cyrus Rustomji, South 8 Technologies	Recent Research on Prospect Radioisotope Fuel for European Radioisotope Power Systems: Americium-Uranium Oxide Dr. Emily Jane Watkinson, University of Leicester
11:30 - 11:55	NASA Gateway Power and Propulsion Element Electrical Power System Overview Mr. Michael Aulio, NASA Glenn Research Center	Towards a Photovoltaic Power Source for Missions to Uranus Dr. Andreea Boca, Jet Propulsion Laboratory, California Institute of Technology	11:30 - 11:55	EnerSys Title III Domestic Material ZeroVolt™ Chemistry for Deep Space Missions Mr. Joe Troutman, EnerSys Advanced Systems	M2020 Power System Electronics Mr. Greg Carr, Jet Propulsion Laboratory, California Institute of Technology	11:30 - 11:55	Advancing Gas and Liquid Cathodes for Primary Batteries via Fluorinated Reactants Dr. Betar Gallant, Massachusetts Institute of Technology	Safety Tests for the ESA Radioisotope Power Systems Ms. Alessandra Barco, University of Leicester
11:55 - 12:20	Sustainable Power for the Lunar Surface Dr. Wesley Fuhrman, Johns Hopkins University Applied Physics Laboratory	Extreme Environments Solar Power for Use Near Jupiter Ms. Anna Maria Pal, NASA Glenn Research Center	11:55 - 12:20	High Performance Li-Ion Battery Capable of Near Zero Volt Storage Dr. Jeff Nelson, ADA Technologies	GaN-Based Distributed Power Electronics Architecture for In Situ Lunar Missions Dr. Ansel Barchowsky, Jet Propulsion Laboratory, California Institute of Technology	11:55 - 12:20	Exploiting New Electrolytes of Extreme Low-Temperature Lithium Batteries Dr. Zheng Chen, University of California San Diego	A Multi-Stage Thermoelectric Module Design for a Radiatively Coupled Am-241 RTG Dr. Ramy Mesalam, University of Leicester
12:20 - 12:45	Micro-Grid for Future Planetary Surface Needs Mr. Jeffrey Csank, NASA Glenn Research Center	High Performance Deployable Photovoltaic Systems for Planetary Exploration – MMA HaWK Series Mr. Eric Ruhl, MMA Design, LLC	12:20 - 12:45	Lithium Ion Battery Performance in Low Earth Orbit Satellite Applications Mr. Riley Cook, Dalhousie University	Lunar Flashlight Power Subsystem Architecture and Implementation Ms. Jackie Rapinchuk, Jet Propulsion Laboratory, California Institute of Technology	12:20 - 12:45	Outstanding Low-Temperature Performance of Structure-Controlled Crumpled Graphene Battery Anode Based on the Surface-Controlled Charge Storage Mechanism Mr. Michael Lee, Georgia Institute of Technology	Gas Giant Atmospheric Probe with In-Situ Power Dr. Geoffrey Landis, NASA Glenn Research Center

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12:45 - 1:15	Lunch Break/Chat Rooms	Lunch Break/Chat Rooms
	Track 1: Power Systems and New Power System Architectures, cont. Session Chair: Mr. Eric Aguilar, Jet Propulsion Laboratory, California Institute of Technology	Track 2: Advanced Power Concepts Session Chair: Dr. Andreea Boca, Jet Propulsion Laboratory, California Institute of Technology
1:15 - 1:40	A Tethered Architecture for Long-Distance Power and Communication Transmission to Support Lunar Operations Dr. Patrick McGarey, Jet Propulsion Laboratory, California Institute of Technology	Dust Mitigation for Lunar Surface Solar Arrays Dr. Joel Schwartz, Jet Propulsion Laboratory, California Institute of Technology
1:40 - 2:05	Mars Exploration Plans and Possibilities in the Next Decade Dr. Larry Matthies, Jet Propulsion Laboratory, California Institute of Technology	Tritium Power Sources Dr. Peter Cabauy, City Labs, Inc.
2:05 - 2:30	Mars Sample Return Power System Electronics Mr. Greg Carr, Jet Propulsion Laboratory, California Institute of Technology	Thermo-Electrochemical System for Ultra-High Efficiency Heat to Electrical Energy Conversion Dr. Rengaswamy Srinivasan, Johns Hopkins University Applied Physics Laboratory
2:30 - 2:55	Power Electronics Design for the Mars Helicopter Project Mr. Joe Zitkus, Jet Propulsion Laboratory, California Institute of Technology	Chemical Heat Integrated Power Systems (CHIPS) to Survive Lunar Night Environments Dr. Terry Hendricks, Jet Propulsion Laboratory, California Institute of Technology
2:55 - 3:20	Psyche Power System Electronics Mr. Greg Carr, Jet Propulsion Laboratory, California Institute of Technology	Controllable Combustion of Metal Fuels for Space Power Systems Dr. Evgeny Shafirovich, The University of Texas at El Paso
3:20 - 3:30	Break/Chat Rooms	Break/Chat Rooms

12:45 - 1:15	Lunch Break/Chat Rooms	Lunch Break/Chat Rooms
	Track 1: Energy Storage, cont. Session Chair: Dr. James Wu, NASA Glenn Research Center	Track 2: Power Sources Session Chair: Mr. David Woerner, Jet Propulsion Laboratory, California Institute of Technology
1:15 - 1:40	The Use of High Specific Energy 18650-Size Li-Ion Cells with Good Radiation Tolerance for Missions to the Outer Planets Dr. Marshall Smart, Jet Propulsion Laboratory, California Institute of Technology	MMRTG Interactions with the Titan Surface Environment Dr. Ralph Lorenz, Johns Hopkins University Applied Physics Laboratory
1:40 - 2:05	A Multiphysics Study to Improve Specific Energy of Primary Batteries for Low-Temperature Operation for Deep Space Missions Dr. Mohit Mehta, KBRWyle Services, LLC	Thermoelectric-Mechanical Coupled Numerical Modeling of Thermoelectric Generators Mr. Edward Ledesma, University of Pittsburgh
2:05 - 2:30	Molten Lithium Battery for Space (Venus) Applications Dr. Yuxing Wang, University of Dayton Research Institute	Understanding the MMRTG Lifetime Performance Using Modeling and Analysis Dr. Christofer Whiting, University of Dayton Research Institute
2:30 - 2:55	Space Force Energy Storage Roadmap Mr. Brad Reed, WR Scientific, Inc.	Magnetics Testing on Radioisotope Power Systems at Idaho National Laboratory Ms. Amanda Gates, Idaho National Laboratory
2:55 - 3:20	The Challenges with Lifetime Estimation of Lithium-Ion Batteries for Extended Space Missions Ms. Weiping Diao, University of Maryland	Progress towards the Development of High Temperature Advanced Thermoelectric Devices Mr. Billy Li, Jet Propulsion Laboratory, California Institute of Technology
3:20 - 3:30	Break/Chat Rooms	Break/Chat Rooms

12:45 - 1:15	Lunch Break/Chat Rooms	Lunch Break/Chat Rooms
	Track 1: Power Systems, Sub-Systems and Components for Operation in Extreme Environments Session Chair: Dr. Terry Hendricks, Jet Propulsion Laboratory, California Institute of Technology	Track 2: Power Conversion and Power Switching Electronics Session Chair: Dr. Vladimir Jovovic, Jet Propulsion Laboratory, California Institute of Technology
1:15 - 1:40	Radioisotope Power Systems Waste Heat Mitigation for Ice and Ocean World Surface Exploration Mr. Brian Bairstow, Jet Propulsion Laboratory, California Institute of Technology	New Space Power Supply & Control Unit Approach Mr. Gerhard Alexander Lampe, Tesat-Spacecom GmbH & Co. KG
1:40 - 2:05	Near-Term Ocean Worlds Subsurface Access Mission Concepts Using Radioisotope Power Systems Dr. Jean-Pierre Fleurial, Jet Propulsion Laboratory, California Institute of Technology	Introduction and Performance Capability Review of a RadHard Smart Power Switch Controller Mr. Timothy Meade, Cobham Advanced Electronic Solutions
2:05 - 2:30	SLUSH (Search for Life Using Submersible Heated Drill): Nuclear Powered Probe for Exploration of Europa Ocean Dr. Kris Zacny, Honeybee Robotics	Resurrecting Magnetic Amplifiers for Radiation Tolerant Design Mr. Neil Barabas, Jet Propulsion Laboratory, California Institute of Technology
2:30 - 2:55	RIPS Rotor/Impeller Power System for Atmospheric Entry Probes Dr. Noam Izenberg, Johns Hopkins University Applied Physics Laboratory	Present and Future Challenges in Space-Grade Power Management from a Manufacturer's Perspective Dr. Javier Valle, Texas Instruments
2:55 - 3:20	New Power Technologies for Venus Low-Altitude and Surface Missions Dr. Ratnakumar Bugga, Jet Propulsion Laboratory, California Institute of Technology	Optimization of a Cascaded Buck-LLC Isolated Resonant-Tank Converter for Space Craft Mr. Thomas Cook, University of Pittsburgh
3:20 - 3:30	Break/Chat Rooms	Break/Chat Rooms

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3:30 - 3:55	Flying Capacitor Multilevel Converters for Use in the ASTRAEUS Anode Power Supply Dr. Ansel Barchowsky, Jet Propulsion Laboratory, California Institute of Technology	Thermal Vacuum Performance Testing of Multi-Mission Radioisotope Thermoelectric Generator at Idaho National Laboratory in Support of the Mars 2020 Rover Mission Mr. Jaymon Birch, Idaho National Laboratory	3:30 - 3:55	Advanced Lithium Sulfur Technologies for High Energy Applications Dr. James Dong, Navitas Systems ASG	Power Beaming for Deep Space and Permanently Shadowed Regions Dr. Jonathan Grandier, Jet Propulsion Laboratory, California Institute of Technology	3:30 - 3:55	Status of Regenerative Fuel Cell Technologies for Lunar Surface Applications Mr. Cody O'Meara, NASA Glenn Research Center	Dynamic Radioisotope Power Systems Status and Path to Flight Mr. Salvatore Oriti, NASA Glenn Research Center
3:55 - 4:20	Partial Power Processing Using High-Frequency Resonant DC-DC Converters for Space Mr. Xin Zan and Prof. Al-Thaddeus Avestruz, University of Michigan, Ann Arbor	Development of High Efficiency Thermoelectric Devices for Space Applications Dr. Fivos Drymiotis, Jet Propulsion Laboratory, California Institute of Technology	3:55 - 4:20	Ultra-Safe, High Energy-Density, Solid-State Batteries for Extreme Temperatures Dr. Eric Wachsman, University of Maryland	Lunar Polar Exploration with Beamed Powered Rovers Dr. Geoffrey Landis, NASA Glenn Research Center	3:55 - 4:20	Demonstration of High Power Lithium-Ion Cell Performance in Space Environments Dr. Rob Gitzendanner, EaglePicher Technologies	Verification and Validation of Dynamic Power Converters for Radioisotope Generators Mr. Scott Wilson, NASA Glenn Research Center
4:20 - 4:45	Design and Optimization of Radiation-Hardened Isolated Converters for Deep Space Applications Dr. Ahmadreza Amirahmadi, Jet Propulsion Laboratory, California Institute of Technology	Life Performance Prediction Approach for Skutterudite-Based TE Converters Dr. Thierry Caillat, Jet Propulsion Laboratory, California Institute of Technology	4:20 - 4:45	A Breath of Fresh Air in Solid State Battery: A Game-Changer in Polymer Electrolyte Dr. Mike Zimmerman, Ionic Materials	Flexible Integrated Circuit Phased Arrays for Microwave Power Beaming Mr. Austin Fikes, California Institute of Technology	4:20 - 4:45	Lithium-Ion COTS Cell Batteries for LEO Missions Ms. Jackie Kennedy, EaglePicher Technologies	Dynamic Power Conversion Maturation for Small Radioisotope Power Systems Mr. Scott Wilson, NASA Glenn Research Center
4:45 - 5:10	High-Reliability Power Control and Distribution Electronics for the Europa Clipper Mission Mr. Branden Kahn, Jet Propulsion Laboratory, California Institute of Technology	Alternate Radioisotope Heat Source for Deep Space Exploration Dr. Daniel Kramer, University of Dayton Research Institute	4:45 - 5:10	SABERS Solid-State Architecture Batteries for Enhanced Rechargeability and Safety for Extended Deep Space Applications Dr. Rocco Viggiano, NASA Glenn Research Center	Power & Ancillary Services Beaming Mr. Gary Barnhard Xtraordinary Innovative Space Partnerships, Inc. (XISP-Inc)	4:45 - 5:10	Mitigation of Thermal Runaway Events in Batteries by Reducing Cell-to-Cell Thermal Communication Dr. Kevin Roth, ADA Technologies, Inc.	A Parametric Model Characterization the Performance of the Johnson Thermal Energy Conversion (JTEC) System Dr. Timothy Miller, Saint Francis University
5:10 - 5:15	Preview for Next Day & Adjourn	Preview for Next Day & Adjourn	5:10 - 5:15	Preview for Next Day & Adjourn	Preview for Next Day & Adjourn	5:10 - 5:15	Final Announcements	Final Announcements
5:15 - 5:30	Chat Rooms	Chat Rooms	5:15 - 5:30	Chat Rooms	Chat Rooms	5:15 - 5:30	Chat Rooms	Chat Rooms