



May 3, 2021

12:00 p.m. EDT Overview/Kickoff

12:15 p.m. EDT ***Solar: Dynamo/Cycle/Global Surface Properties***

Moderators: Sabrina Savage
Mark Linton

Speakers: Andres Muñoz-Jaramillo
Mark Cheung

1:45 p.m. EDT Break

2:15 p.m. EDT ***Corona and Inner Heliosphere***

Moderators: Noé Lugaz
Amir Caspi

Speakers: Nicholeen Viall
Christina Cohen

3:45 p.m. EDT Break

4:00 p.m. EDT ***Fundamental Physics Processes [#1 Wave-Particle Interactions]***

Moderators: Lawrence Kepko
Merav Opher

Speakers: Wen Li
Charles Smith

4:45 p.m. EDT Break

5:00 p.m. EDT ***Posters 1: The Sun and Inner Heliosphere***

Poster Number, First Author, and Poster Title

- A.1 Robert Allen
The Need to Investigate the Variability and Multi-Scale Nature of the Solar Wind and Its Impact on Energetic Particles
- A.2 Benjamin Alterman — Presented by M. I. Desai
Closing Our Mesoscale Knowledge Gap: Using the Space Weather Advanced Notification System (SWANS) to Disentangle Mesoscale Temporal and Spatial Variation in the Solar Wind
- A.3 Benjamin Alterman
Solar Wind Helium Measurements Demonstrate the Importance of Unified and Consistent Long Duration *In Situ* Plasma Data
- A.4 Charles Arge
Multi-Vantage-Point Solar and Heliospheric Observations to Advance Physical Understanding of the Corona and Solar Wind



Posters 1: The Sun and Inner Heliosphere (continued)

- A.5 Arun Awasthi
Small-Intensity-Class Flares Unveiling the Magnetic Environment of Solar Eruptive Processes
- A.6 Timothy Bastian
Solar and Heliospheric Physics with the Next Generation VLA (ngVLA)
- A.7 Timothy Bastian
Solar Physics with the Atacama Large Millimeter-Submillimeter Array (ALMA)
- A.8 Sofiane Bourouaine
Turbulence Characteristics of Switchback and Nonswitchback Intervals Observed by Parker Solar Probe
- A.9 Amir Caspi
Understanding Heating of the Solar Corona Through Soft X-Ray Spectroscopy
- A.10 Phillip Chamberlin
Next Generation Formation-Flying White Light Coronagraphs for Science
- A.11 Bin Chen
A Next Generation Radio Heliograph: New Insights into the Physics of the Active Sun
- A.12 Serena Criscuoli
Challenges and Advances in Modeling the Solar Atmosphere
- A.13 W. Daughton
Ion Heating and Acceleration in Impulsive Flares
- A.14 Sarah Gibson
Untangling the Global Coronal Magnetic Field with Global Multiwavelength Observations
- A.15 Natchimuthuk Gopalswamy
The Multiview Observatory for Solar Terrestrial Science (MOST)
- A.16 Fan Guo
Electron Heating, Acceleration, and Transport in Solar Flares
- A.17 Egor Illarionov
Machine-Learning Framework for Construction and Segmentation of Coronal Holes Synoptic Maps
- A.18. Andrew Inglis
Rapid-Cadence EUV and UV Imaging of the Solar Atmosphere: Science and Challenges
- A.19 J. C. Kasper — Presented by Joseph Lazio
The Sun Radio Interferometer Space Experiment (SunRISE) Mission
- A.20 Sim Kaur
Primary Drivers of Intense, Major, and Minor Geomagnetic Storms During the Solar Cycles 23–25
- A.21 Graham Kerr
Solar Flare Energy Partitioning and Transport — The Impulsive Phase
- A.22 Graham Kerr
Solar Flare Energy Partitioning and Transport — The Gradual Phase
- A.23 James Klimchuk
Causes and Consequences of Heating in the Magnetically Closed Corona
- A.24 Alexander Kosovichev
Helioseismic Observations of Dynamo Processes in the Solar Interior



Posters 1: The Sun and Inner Heliosphere (continued)

- A.25 Robert Leamon
Heliospheric Meteorology: HMM, the \$200 Mission
- A.26 Noé Lugaz
The Importance of Fundamental Research on the Coronal and Heliospheric Evolution of Coronal Mass Ejections
- A.27 Emily Mason
The Need for Consistent, Comprehensive Inner Heliosphere Data
- A.28 James Mason
CME Acceleration as a Probe of the Coronal Magnetic Field
- A.29 Jeffrey Newmark
Solar Heliosphere Constellation
- A.30 Mitsuo Oka
Solar Flares as the Key Toward Understanding Particle Acceleration in the Plasma Universe
- A.31 Linda Parker
Space Weather Architectures for NASA Missions
- A.32 Eliad Peretz
Observing Coronal Microscales from the Ground Using an Orbiting Artificial Guide Star and Adaptive Optics
- A.33 Joseph Plowman
Implications of a New Capability for 3D Coronal Reconstruction from a Single Perspective Snapshot
- A.34 Arik Posner
A Multi-Purpose Heliophysics L4 Mission
- A.35 Giuseppe Prete
Energetic Particle Fluxes at Heliospheric Shocks: Evidence of Superdiffusion and Comparison Between Analytical and Numerical Modeling
- A.36 Douglas Rabin
Probing Corona Microscales
- A.37 Kevin Reardon
Revealing Fundamental Physics of the Sun with DKIST
- A.38 Yeimy Rivera
Connecting Heliospheric Phenomena with Their Solar Source Through Multi-Point Compositional Measurements
- A.39 James Ryan
High-Energy Neutrons in the Heliosphere
- A.40 Jenna Samra
A Balloon-Borne Infrared Coronagraph and Spectropolarimeter for Magnetic Field Measurements of the Solar Corona
- A.41 Daniel Seaton
A Strategy for a Coherent and Comprehensive Basis for Understanding the Middle Corona
- A.42 Albert Shih
Fundamentals of Impulsive Energy Release in the Corona



Posters 1: The Sun and Inner Heliosphere (continued)

- A.43 Albert Shih
Ion Acceleration in Solar Eruptive Events
- A.44 Luca Sorriso-Valvo
Statistical Study of Electron Density Turbulence and Ion-Cyclotron Waves in the Inner Heliosphere: Solar Orbiter Observations
- A.45 Alphonse Sterling
Solar Coronal Jet Studies as an Example that Motivates Future High-Resolution Solar Investigations
- A.46 Marc Swisdak
Solar Flare Onset and Dynamics
- A.47 Adam Szabo
Inner Heliospheric Flotilla
- A.48 Sanjiv Tiwari
Dependence of the Heating in Active Region Coronal Loops on Magnetic Conditions at the Loop Feet in the Photosphere
- A.49 Marco Velli
HERMES: HEliospheRIC Magnetic Energy Storage and Conversion: From the Solar Corona to Planetary Magnetospheres
- A.50 David Wexler
Solar Wind Acceleration Through the Middle Corona: Spacecraft Radio Studies
- A.51 Lynn Wilson
Accurate Measurements of Thermal Velocity Distribution Functions in the Solar Wind
- A.52 Reka Winslow
On the Importance of Investigating ICME Complexity Evolution During Propagation
- A.53 Peter Young
Magnetic Reconnection: UV Bursts — A Case for Hi-Res EUV Images, Spectra, and Magnetograms



May 4, 2021

12:00 p.m. EDT

Magnetosphere

Moderators: Lawrence Kepko

Li-Jen Chen

Speakers: Allison Jaynes

Tuija Pulkkinen

1:30 p.m. EDT

Break

2:15 p.m. EDT

Ionosphere, Thermosphere, Mesosphere

Moderators: Shasha Zou

Larry Paxton

Speakers: Astrid Maute

Larisa Goncharenko

3:45 p.m. EDT

Break

4:00 p.m. EDT

Fundamental Physics Processes [#2 Magnetic Reconnection]

Moderators: Li-Jen Chen

Mark Linton

Speakers: James Drake

Hantao Ji

4:45 p.m. EDT

Break

5:00 p.m. EDT

Posters 2: The Near-Earth Space Environment

Poster Number, First Author, and Poster Title

- B.1 Matthew Argall
Intelligent Missions in a Living Heliophysics System Observatory
- B.2 John Bonnell
A Path Towards Revolutionary Improvements in 3D Fields and Plasma Measurements
- B.3 Joseph Borovsky
The Uncertainty of Nightside Magnetosphere-Ionosphere Magnetic Connections:
Critical Progress Since the Call in the Last Decadal Survey
- B.4 Brandon Burkholder
2-Dimensional Solar Wind Propagation from L1 to Earth
- B.5 Natalia Buzulukova
Global Imaging in Energetic Neutral Atoms: Tracing Energy Pathways
- B.6 Shibaji Chakraborty
Observing and Modeling Space Weather Phenomena in the Ionosphere
- B.7 Li-Jen Chen
Kinetic Effects of Solar Driving on Magnetospheres



Posters 2: The Near-Earth Space Environment (continued)

- B.8 Peter Chi
Magnetoseismology Research for the Next Decade
- B.9 Anthea Coster
Developing a Modeling Framework for Understanding Hemispheric Asymmetries via Model-Data Comparisons
- B.10 Anthea Coster
The Potential for Community Science with Future Incoherent Scatter Radar Observations
- B.11 Gian Luca Delzanno
The Need to Understand the Cold-Ion and Cold-Electron Populations of the Earth's Magnetosphere
- B.12 Eric Donovan
The Observations We Need for System Science
- B.13 John Dorelli
Understanding the Connection Between Multiscale Magnetotail Dynamics and the Aurora
- B.14 Richard Eastes
Global Remote Sensing of the Thermosphere-Ionosphere System — A Catalyst for Advances in 2050 and Beyond
- B.15 Ana Elias
Implications of Solar Activity and Geomagnetic Field Secular Variations on Long-Term Trends Estimation
- B.16 Philip Fernandes
Heavy Ions: Tracers and Drivers of Solar Wind/Ionosphere/Magnetosphere Coupling
- B.17 Christine Gabrielse
Mesoscales and Their Contribution to the Global Response: A Focus on the Magnetotail Transition Region and Magnetosphere-Ionosphere Coupling
- B.18 Kevin Genestreti
Open Questions in Magnetotail Physics
- B.19 Michael Hartinger
Towards a Better Understanding of the Causes and Consequences of Geomagnetic Perturbations in 2050
- B.20 Sheng Huang
Hiss in the Plasmasphere and Plumes: Global Distribution from Machine Learning Technique and Their Effects on Global Loss of Energetic Electrons
- B.21 David Hysell
An Ionospheric Modification Facility at the Magnetic Equator
- B.22 Allison Jaynes
A Call for Interdisciplinary Science Focusing on How Particle Precipitation from the Magnetosphere Affects Earth's Atmosphere
- B.23 Larry Kepko
Mesoscale Dynamics — The Key to Unlocking the Universal Physics of Multiscale Feedback
- B.24 Kristopher Klein
HelioSwarm: A Mission to Characterize Turbulence in Space Plasmas by Leveraging Multi-Point Multi-Scale Observation



Posters 2: The Near-Earth Space Environment (continued)

- B.25 Delores Knipp
Making Full Use of Archival and Future Magnetosphere-Ionosphere-Thermosphere (MIT) Energy Deposition Data and Proxies
- B.26 Jinxing Li
Generation of Rising-Tone Chorus Waves, Quasiperiodic Emissions, Magnetosonic Waves, and EMIC Waves
- B.27 Ruth Lieberman — Presented by V. A. Yudin
Upper Atmosphere Reanalysis in the Goddard Earth Observing System for Space Weather Applications and Support of Heliophysics Missions (GEOS-H)
- B.28 Michael Liemohn
Global-Scale Ionospheric Outflow: Major Processes and Unresolved Problems
- B.29 Tomoko Matsuo
DYNAMIC — A Mission Concept to Transform the Climatological Picture of the Ionosphere and Thermosphere into its Weather and Beyond
- B.30 Tomoko Matsuo
Predictability of the Space-Atmosphere Interaction Region (SAIR)
- B.31 Katariina Nykyri
Cross-Scale Plasma Science in Super- and Sub-Magnetosonic Plasma Regimes
- B.32 Jens Oberheide
Making the Step from Tidal Climate to Tidal Weather — Connecting Meteorology with Space Weather
- B.33 Keiichi Ogasawara
Importance of Ion Velocity Distribution Function Observations in the Ionosphere
- B.34 Dogacan Ozturk
A Collaborative Approach to Understanding Auroral Region Magnetosphere-Ionosphere-Thermosphere Coupling Through Ionospheric Conductivity
- B.35 Larry Paxton
Using Remote Sensing from Space to Explore the Ionosphere/Thermosphere
- B.36 Silvia Perri
Detection of Electrostatic Waves in the Earth's Magnetosheath
- B.37 Robert Pfaff
Understanding the Earth's Atmosphere-Space Transition Region
- B.38 Murong Qin
Energetic Electron Precipitation Modulated by Whistler-Mode Waves
- B.39 Douglas Rowland
Cross-Scale and Cross-Regime Coupling in the ITM: Studying Weather, Not Just Climate, in the Middle and Upper Atmosphere
- B.40 Theodoros Sarris
Daedalus: A Mission Concept to Explore the Lower Thermosphere-Ionosphere
- B.41 Ryan Volz
A Global Radio Remote Sensing Network for Observing Upper-Atmospheric Dynamics
- B.42 Zhonghua Xu
Causes and Consequences of Interhemispheric Asymmetries in the Magnetosphere — Ionosphere System
- B.43 Shunrong Zhang
Storm-Time Dynamic Magnetosphere-Ionosphere-Thermosphere Coupling at Subauroral Latitudes



May 5, 2021

12:00 p.m. EDT ***Space Weather: Basics and Applied Research, Operations, and Human Exploration***

Moderators: Noé Lugaz
Lawrence Kepko
Speakers: Angelos Vourlidas
Delores Knipp

1:30 p.m. EDT Break

2:15 p.m. EDT ***Outer Heliosphere and Interstellar***

Moderators: Merav Opher
Amir Caspi
Speakers: Gary Zank
Elena Provornikova

3:45 p.m. EDT Break

4:00 p.m. EDT ***Fundamental Physics Processes [#3 Turbulence]***

Moderators: Jaye Verniero
Li-Jen Chen
Speakers: Marco Velli
Emily Lichko

4:45 p.m. EDT Break

5:00 p.m. EDT ***Posters 3: Space Weather, Outer Heliosphere, and Local Interstellar Medium***

Poster Number, First Author, and Poster Title

- C.1 Shivangi Bhardwaj
Distribution and Association of Geomagnetic Storms with Properties of Halo CMEs
- C.2 Pontus Brandt
Expanding the Realm of Solar and Space Physics: Exploration of the Outer Heliosphere and Local Interstellar Medium
- C.3 Konstantinos Dialynas
The Dynamic Heliosphere and Its Interaction with the LISM: Open Questions and Future Perspectives
- C.4 Mausumi Dikpati
Space Weather Modeling and Prediction for Intermediate Time-Scales
- C.5 Bent Ehresmann
Space Weather and Radiation Measurements on the Martian Surface with MSL/RAD Throughout the Solar Cycle
- C.6 Heather Elliott
Exploring the Solar Wind in the Outer Heliosphere



Posters 3: Space Weather, Outer Heliosphere, and Local Interstellar Medium (continued)

- C.7 Stefan Eriksson
Magnetic Reconnection Science in the Outer Heliosphere
- C.8 Andre Galli
The Potential of the Interstellar Probe for Measuring In-Situ Interstellar Neutrals
- C.9 Agnieszka Gil
Analysis of Strong Geomagnetic Storms and Electrical Grid Failures in Poland for the Period 2010–2014
- C.10 Charlotte Goetz
Cometary Plasma Science
- C.11 James Green
Space Weather Observations and Modeling in Support of Human Exploration of Mars
- C.12 Matthew Hill
Galactic Cosmic Rays Near the Interstellar Interface
- C.13 Michael Kirk
Discovering the Ancient Sun on Solar System Bodies
- C.14 Christina Lee
Space Weather at Mars: Six Years of MAVEN Observations
- C.15 George Livadiotis
The Role of Kappa Distributions in Space Thermodynamics
- C.16 Jesse Miller
Simulating Supernova Collisions with the Heliosphere
- C.17 Denny Oliveira
Local Intense Ground dB/dt Variations Caused by Substorm-Time Injections Triggered by Interplanetary Shocks with Different Inclinations
- C.18 Merav Opher
Our Heliospheric Shield, a Case of a Habitable Astrosphere: Open Science Questions
- C.19 Romana Ratkiewicz
What Does the Heliosphere Look Like?
- C.20 Viacheslav Sadykov
Development of “All-Clear” Prediction of Solar Proton Events Using Machine Learning
- C.21 Carl Shneider
A Machine-Learning-Ready Software Framework Prepared for the SoHO and SDO Missions for Space Weather Readiness
- C.22 Justyna Sokol
Solar Environment as Driving and Constraining Factor in the Study of the Heliosphere and the Local Interstellar Medium
- C.23 Pawel Swaczyna
Helium Energetic Neutral Atoms as a Tool to Study the Structure of the Heliosphere and the Local Interstellar Medium
- C.24 Drew Turner
A Vision for Heliophysics’ Role in Space Weather Research as We Advance Towards 2050
- C.25 Sharon Vadas
Medium-Scale GWs in the F Region from the Polar Vortex via Multi-Step Vertical Coupling



Posters 3: Space Weather, Outer Heliosphere, and Local Interstellar Medium (continued)

- C.26 Daniel Weimer
The Structure of Flux Tubes in the IMF: A Major Source of Uncertainty in Space Weather Predictions and Research
- C.27 M. A Xapsos — Presented by Yihua Zheng
Recommending Low-Cost Compact Space Weather Sensor Suites for NASA Missions
- C.28 Gary Zank
Theoretical Challenges in Exploring the Outer Heliosphere and Interstellar Medium
- C.29 E. Zesta
Estimating Satellite Orbital Drag During Historical Magnetic Superstorms ($Dst < -500$ nT)
- C.30 Tomislav Žic
The Drag-Based Modeling
- C.31 Gaetano Zimbardo
Superdiffusive Transport and Acceleration at Heliospheric Shocks



May 6, 2021

- 12:00 p.m. EDT ***Fundamental Physics Processes [#4 Plasma-Neutral Interactions]***
 Moderators: Shasha Zou
 Mark Linton
 Speakers: James Leake
 Roger Varney
- 12:45 p.m. EDT Break
- 1:00 p.m. EDT ***Fundamental Physics Processes [#5 Shock Physics]***
 Moderators: Jaye Verniero
 Li-Jen Chen
 Speakers: Joe Giacalone
 Katherine Goodrich
- 1:45 p.m. EDT Break
- 2:15 p.m. EDT ***Expanding the Frontiers: Planetary Magnetosphere/Habitability/Exoplanets/Sun as a Star***
 Moderators: Larry Paxton
 Ian Cohen
 Amir Caspi
 Merav Opher
 Speakers: John Raymond
 Ofer Cohen
 Fran Bagenal
 Sigrid Close
- 3:45 p.m. EDT Break
- 4:00 p.m. EDT ***Expanding the Frontiers: Planetary Magnetosphere/Habitability/Exoplanets/Sun as a Star (continued)***
- 4:45 p.m. EDT Break
- 5:00 p.m. EDT ***Posters 4: Expanding the Frontiers of Heliophysics and Heliophysics as a Community in 2050***
Poster Number, First Author, and Poster Title
 D.1 Nathalia Alzate
 The Sun-Earth Connection as a Single System: Data Analysis and Processing Needs of Current and Future Missions



Posters 4: Expanding the Frontiers of Heliophysics and Heliophysics as a Community in 2050 (continued)

- D.2 Marin Anderson
Extrasolar Planets, Magnetic Fields, and Planetary Habitability
- D.3 Fran Bagenal
Exploration of Planetary Magnetospheres: Opening Imagination and Testing Theories
- D.4 C. M. Bard — Presented by Michael Kirk
The Discipline of HelioAnalytics
- D.5 Will Barnes
The Ongoing Development and Support of Atomic Physics in Solar and Heliospheric Science
- D.6 David Brain
Near and Long-Term Prospects for Understanding Whether Planetary Magnetic Fields are Required for Atmospheric Retention and Habitability
- D.7 Angeline Burrell
Equitable Letters for Space Physics
- D.8 George Clark
JUGGERNOT: A Mission to the Solar System's Greatest Particle Accelerator
- D.9 Christina Cohen
Living with a Star Architecture Committee Seeks Input
- D.10 Ian Cohen
The Case for Studying Other Planetary Magnetospheres and Atmospheres
- D.11 Anna DeJong
Best Practices for Supporting Soft Money Scientists
- D.12 Seth Dorfman
Alfvén Wave Processes in Heliophysics: The Role of Laboratory Experiments
- D.13 Jared Espley
The Martian Hybrid Magnetosphere: A Natural Plasma Laboratory
- D.14 William Fox
Opportunities for Laboratory Experiments on Heliospheric Plasma Physics
- D.15 Katherine Garcia-Sage
Enabling Cross-Heliophysics and Cross-Divisional Research
- D.16 Sarah Gibson
The PUNCH Associate Investigator (AI) Program
- D.17 Sarah Gibson
Whole Heliosphere and Planetary Interactions (WHPI): A New Initiative on Solar Minimum
- D.18 Lindsay Glesener
Understanding Stellar Flares by Observing the High-Energy Sun
- D.19 Lindsay Goodwin
Long-Term Vision for Heliophysics: A Summary of Thoughts from the CEDAR Community
- D.20 Alexa Halford
Documenting the Pathway into the Future with Application Usability Levels



Posters 4: Expanding the Frontiers of Heliophysics and Heliophysics as a Community in 2050 (continued)

- D.21 Alexa Halford
Enabling and Advancing Scientific Innovation Through Cultivating a Collaborative, Inclusive, Diverse, and Safe Community Culture
- D.22 Andrea Harman
The Pragmatic Interstellar Probe Mission Concept Study Online Library
- D.23 Allison Jaynes
An Open-Access Community: Why We Need to Prioritize Our Scientific Environment as a Welcoming Space
- D.24 Hantao Ji
Major Scientific Challenges and Opportunities in Understanding Magnetic Reconnection and Related Explosive Phenomena in Solar and Heliospheric Plasmas
- D.25 Les Johnson
Solar Sail Propulsion — Accessing New Vantage Points for Heliophysics
- D.26 Peter Anto Johnson
Corona Discharge-Mediated Ionic Wind Powered Propulsion
- D.27 Peter Kollmann
Jupiter’s Radiation Belts as a Target for NASA’s Heliophysics Division
- D.28 Joseph Lazio
Enabling Richer Data Sets for Future Heliophysics Missions
- D.29 Kathleen Mandt
Advancing Space Science Requires NASA Support for Coordination Between the Science Mission Directorate Communities
- D.30 Ryan McGranaghan
Complexity Heliophysics: A New Science that Transcends the Previous Boundaries of Our Field
- D.31 Saumitra Mukherjee
Impact of Solar Variability on Planetary Systems
- D.32 Ayris Narock
Ethical AI and Responsible Data Science for Heliophysics
- D.33 Joseph Olson
Enhancing Collaboration Between Laboratory Plasma Experiments and the Heliophysics Community
- D.34 Olga Panasenco
The HERMES NASA DRIVE Science Center as a Unifying Laboratory for Fundamental Physics of the Sun, Heliosphere, Magnetosphere, and Applications for Astrophysics
- D.35 Larry Paxton
Reframing Heliophysics as Discovery and Exploration Science
- D.36 Abigail Rymer
Cross-Divisional Opportunities to Maximize the Science Return from Solar System Missions
- D.37 Samuel Schonfeld
HelioWeb: A Resource for 21st Century Science



Posters 4: Expanding the Frontiers of Heliophysics and Heliophysics as a Community in 2050 (continued)

- D.38 R. M. Snyder
Enabling Long-Term Solar Cycle Science Through In-Space Servicing
- D.39 Errol Summerlin
Co-Axial Tomography of the Solar Corona and Near Sun Environment (CATSCANS)
- D.40 Drew Turner
Re-Envisioning Heliophysics for 2050: A Compelling Discipline with a Unified Identity, New Brand, and Long-Term Vision



May 7, 2021

12:00 p.m. EDT ***Heliophysics as a Community in 2050***

Moderators: Ian Cohen
Jaye Verniero
Sabrina Savage
Shasha Zou

1:30 p.m. EDT Break

2:15 p.m. EDT ***Heliophysics as a Community in 2050 (continued)***

Moderators: Ian Cohen
Jaye Verniero
Sabrina Savage
Shasha Zou