



AGU Chapman Conference on Magnetospheric Dynamics

Program Committee

Conveners

[Joseph Kan \(Chair\)](#)

Emeritus, University of Alaska Fairbanks USA

[James Burch](#)

Southwest Research Institute USA

[Peter Delamere](#)

University of Alaska Fairbanks, USA

Program Committee

[Ioannis A. Daglis](#)

University of Athens, Greece

[Robert Ergun](#)

University of Colorado, Boulder

[Harald Frey](#)

University of California, Berkeley

[Jerry Goldstein](#)

Southwest Research Institute, USA

[Guan Le](#)

NASA, USA

[Goran Marklund](#)

Royal Institute of Technology, Sweden

Barry Mauk

Johns Hopkins University, USA

Thomas Moore

NASA, USA

Craig Pollock

NASA, USA

Victor Sergeev

Saint Petersburg State University, Russia

Vytenis Vasiliunas

Max Planck Institute for Solar System Research, Germany

Qiugang Zong

University of Massachusetts- Lowell, USA

Thank You to Our Sponsors

The organizers of this Chapman Conference wish to acknowledge the generous support for this conference.



Scientific Program

MONDAY, SEPTEMBER 28

- 8:00 a.m.– 8:40 a.m. **Monday Tutorial Lecture I**
- 8:00 a.m. –8:40 a.m. **Vytenis M Vasyliunas** | Comparative Magnetospheres in the Solar System
- 8:40 a.m.– 12:30 p.m. **Monday Oral Presentations I**
Presiding: Fran Bagenal
- 9:10 a.m. –9:40 a.m. **Peter A Delamere** | Solar wind interaction with the giant magnetospheres and Earth
- 9:40 a.m. –10:10 a.m. **Chung-Sang Ng** | Exact Vlasov Solutions for Kinetic Flux Ropes Generated during Magnetic Reconnection
- 10:10 a.m. –10:30 a.m. Break
- 10:30 a.m. –11:00 a.m. **Qiugang Zong** | Energetic Particle Acceleration in the Inner Magnetosphere by ULF waves
- 11:00 a.m. –11:30 a.m. **Andrei Runov** | ON THE ROLE OF FLOW BURSTS IN THE ENERGY AND PARTICLE TRANSPORT IN THE MAGNETOTAIL
- 11:30 a.m. –12:00 p.m. **Suping Duan** | Observations of dipolarization in the near-Earth plasma sheet
- 12:00 p.m. –12:30 p.m. **Daniel W Swift** | Inertial Alfvén Waves and the Discrete Aurora
- 1:30 p.m.– 7:20 p.m. **Monday Oral Presentations II**
Presiding: Patricia Reiff
- 1:30 p.m. –2:00 p.m. **Fran Bagenal** | Juno: First Visit to Jupiter's Poles. What are the Lessons from Earth?
- 2:00 p.m. –2:30 p.m. **Henderson M. G.** | Multi-point Observations and Modeling of Particle Injections During Storms and Substorms
- 2:30 p.m. –3:00 p.m. **Lie Zhu** | Active role of the ionosphere in the magnetosphere-ionosphere coupling

- 3:00 p.m. –3:30 p.m. **Vikas S Sonwalkar** | Evolution of Field Aligned Electron and Ion (H⁺, He⁺, O⁺) Densities as a Function of Geomagnetic Storm Activity
- 3:30 p.m. –4:00 p.m. **Hui Zhang** | Cold ions of ionospheric origin observed at the magnetopause and their effects on reconnection
- 4:00 p.m. –4:20 p.m. Break
- 4:20 p.m. –4:50 p.m. **James A Slavin** | Reconnection in Earths magnetotail
- 4:50 p.m. –5:20 p.m. **Goran Tage Marklund** | Characteristics of the Particle Acceleration and Density Cavities Associated With Large-Scale Aurora During Auroral Substorms
- 5:20 p.m. –5:50 p.m. **Jih-Hong Shue** | Origin of the Radial Interplanetary Magnetic Field and Its Interactions With the Magnetosphere
- 5:50 p.m. –6:20 p.m. **Antonius Otto** | Dual Current Sheet Formation During the Substorm Growth Phase: Bursty Bulk Flows and Substorm Expansion
- 6:20 p.m. –6:50 p.m. **Anthony Lui** | Comparison Between Magnetic Reconnection And Current Disruption

TUESDAY, SEPTEMBER 29

- 8:00 a.m.– 8:40 a.m. **Tuesday Tutorial Lecture**
- 8:00 a.m. –8:40 a.m. **James Frederick Drake** | The Physics of Magnetic Reconnection: a tutorial
- 8:40 a.m.– 1:30 p.m. **Tuesday Oral Presentations I**
Presiding: Qiu-Gang Zong
- 8:40 a.m. –9:10 a.m. **Paul Cassak** | The Many Facets of Reconnection at the Dayside Magnetopause
- 9:10 a.m. –9:40 a.m. **Li-Jen Chen** | Structure of the Diffusion Region During Reconnection in the Magnetosphere
- 9:40 a.m. –10:10 a.m. **Joachim Raeder** | Role of Ionosphere in Substorm Dynamics

10:10 a.m. –10:30 a.m.	Break
10:30 a.m. –11:00 a.m.	Yu Lin Investigation of Storm-Time Magnetotail and Ion Injection Using 3-D Global Hybrid Simulation
11:00 a.m. –11:30 a.m.	Masaaki Yamada Study of Energy Conversion and Partitioning in the Magnetic Reconnection Layer of Laboratory Plasma
11:30 a.m. –12:00 p.m.	Amitava Bhattacharjee Integration of Kinetic Effects in Multi-Fluid Models of Reconnection: Towards Next-Generation Global Simulations
12:00 p.m. –12:30 p.m.	Mikhail I. Sitnov Three-dimensional kinetic picture of bursty reconnection in the magnetotail
12:30 p.m. –1:00 p.m.	William Bristow Observations of the relationship between ionospheric central polar cap and dayside throat convection velocities, and solar wind/IMF driving
1:00 p.m. –1:30 p.m.	Binbin Tang Large Scale Current Systems Developed from Substorm Onset: Global MHD Results
2:30 p.m.– 6:00 p.m.	Tuesday Poster Session Presiding: Peter Delamere
T-1	Nataliya Nosikova Spectral parameters of 1-4 mHz geomagnetic and auroral luminosity pulsations in the polar caps and near the polar boundary of the auroral oval
T-2	Wendell Horton Jr Asymmetric coupled interchange-ballooning and EMHD magnetic reconnection in the geomagnetic tail
T-3	Wendell Horton Jr Fast electron scale magnetic reconnection in the geomagnetic tail and ionosphere
T-4	John C Foster Ground Based and Van Allen Probes Observations of Cold Plasma Redistribution Associated with Nightside Reconnection and Substorm Injection
T-8	Lois K Sarno-Smith Wave Activity Associated with Plasmaspheric 1-10 eV Post-Midnight Ion Loss seen by Van Allen Probes

- T-9 **Allison N Jaynes** | Fast diffusion of ultra-relativistic electrons: March 17, 2015 storm event
- T-10 **Aimin Du** | Plasma sheet response of the Earth's magnetosphere to interplanetary shock
- T-12 **Chizurumoke Michael Michael** | Investigation of Ionospheric TEC Variability during Geomagnetic Storms using GPS-TEC Measurement.
- T-13 **Hui Li** | Classification of Fast Flows in Central Plasma Sheet: Superposed Epoch Analysis Based on THEMIS Observations
- T-14 **Haoming Liang** | Oxygen Impacts on Dipolarization Fronts and Reconnection Rate
- T-16 **Miho Saito** | Formation of intense cross-tail and field-aligned currents in the near-Earth tail during substorms
- T-17 **Daniel Schmid** | A Statistical Study of Bz-dips in Front of Magnetotail Dipolarization Fronts
- T-18 **Andrew P Dimmock** | Statistical Study of the Role Played by the Magnetosheath in the Solar Wind - Magnetosphere - Ionosphere Coupling
- T-19 **Lunjin Chen** | Modeling of relativistic electron precipitation into the atmosphere by Electromagnetic Ion Cyclotron Waves
- T-20 **Matthieu Berthomier** | The Alfvén mission to explore Magnetosphere-Ionosphere coupling
- T-21 **Yue Chen** | Mechanisms of the Sudden Loss of Inner-belt Protons: Insights from Observations
- T-22 **Yue Chen** | Forecasting and Remote Sensing Outer-belt Relativistic Electrons from Low-Earth-Orbits
- T-23 **Laila Andersson** | Current Sheets on the Dayside of the Mars Magnetosphere
- T-24 **Joel Dahlin** | Electron Acceleration in 2D and 3D Kinetic Reconnection

Presiding: Yu Lin

- 8:40 a.m. –9:10 a.m. **Patricia H Reiff** | Predicting and Modeling Space Weather
- 9:10 a.m. –9:40 a.m. **Syun-Ichi Akasofu** | The aurora as an electrical discharge phenomenon
- 9:40 a.m. –10:10 a.m. **Robert Walter Schunk** | Ionosphere-Magnetosphere Coupling via Energized Ion Outflow
- 10:10 a.m. –10:30 a.m. Break
- 10:30 a.m. –11:00 a.m. **Hui Li** | Development and Energetics of Geomagnetic Storms Driven by the Solar Wind
- 11:00 a.m. –11:30 a.m. **Tsugunobu Nagai** | Structure of Magnetic Reconnection in the Near-Earth Magnetotail
- 11:30 a.m. –12:00 p.m. **Seiji Zenitani** | High-speed fluid dynamics in magnetic reconnection in a low-beta plasma
- 12:00 p.m. –12:30 p.m. **Paul Song** | Substorms: Ionospheric Manifestation of Magnetospheric Disturbances
- 12:30 p.m. –1:00 p.m. **Mark Conde** | Ion-Neutral Coupling at the Thermospheric Footprint of the Northern Geomagnetic Cusp, Observed During the C-REX Sounding Rocket Mission
- 7:00 p.m.– 9:30 p.m. **Banquet**
- 7:00 p.m. –7:20 p.m. **Jeffrey Todd Freymueller** | Measuring Active Tectonic and Volcanic Activity in Alaska
- 7:20 p.m. –7:40 p.m. **Syun-Ichi Akasofu** | What I learned from auroral substorms

THURSDAY, OCTOBER 01

- 8:00 a.m.– 8:40 a.m. **Thursday Tutorial Lecture**
- 8:00 a.m. –8:40 a.m. **James A Klimchuk** | The Role of Magnetic Reconnection in Solar Dynamics and Heating

- 8:40 a.m.– 12:30 p.m. **Thursday Oral Presentations I**
Presiding: Craig Pollock
- 8:40 a.m. –9:10 a.m. **Ioannis A. Daglis** | The storm-substorm relationship
- 9:10 a.m. –9:40 a.m. **Jerry Goldstein** | Causal Connections Between the Magnetotail and Inner Magnetosphere: Imaging and In Situ Constellation Observations During Moderate to Large Geomagnetic Storms
- 9:40 a.m. –10:10 a.m. **Guan Le** | Observations of Large-Scale Magnetospheric Currents during Geomagnetic Storms
- 10:10 a.m. –10:30 a.m. Break
- 10:30 a.m. –11:00 a.m. **Joseph R Kan** | Tail-Lobe Current Loops Powered Directly by the Solar Wind Drive Magnetic Storms and Auroral Substorms
- 11:00 a.m. –11:30 a.m. **Christopher Carew Chaston** | Coupling the Plasma Sheet to the Inner Magnetosphere with Alfvén waves
- 11:30 a.m. –12:00 p.m. **Harald U Frey** | Auroral Dynamics from Large to Small Scales
- 12:00 p.m. –12:30 p.m. **Mei-Ching Hannah Fok** | Competing Processes of Storm-Time Ring Current and Radiation Belt Evolution
- 2:00 p.m.– 6:00 p.m. **Thursday Poster Session**
Presiding: Hui Zhang
- R-1 **Sharad Chandra Tripathi** | Responding Ionosphere to the Geomagnetic Conditions over the Globe and its interconnection
- R-3 **Rongsheng Wang** | Separatrices: the Key Region for Electron Acceleration during Magnetic Reconnection
- R-4 **Subhash Chandra Kaushik** | Dynamics of Solar Plasma Events and Their Interplanetary Consequences
- R-5 **Christopher M Fowler** | Evidence of Solar Wind Wave Power Propagating Deep into the Ionosphere of Mars
- R-6 **Maria Usanova** | Van Allen Probes observations of oxygen cyclotron harmonic waves in the inner magnetosphere

- R-8 **Ferdinand Plaschke** | Multi-Spacecraft MMS Observations of Dawn Flank Pc5 Waves
- R-9 **Justin Holmes** | Extending Observations of Phase-Space Holes and Double Layers to Consider Electron Cyclotron Maser Emission
- R-10 **Daniel J Gershman** | High Time Resolution Structure in Magnetospheric Plasmas
- R-11 **Gang Kai Poh** | Initial MMS observations of flux ropes embedded in dipolarization events
- R-12 **Cong Zhao** | Magnetospheric Multiscale Mission Observations in the Most Sensitive Portion of the Magnetosphere: The Dynamic Near Earth Magnetotail at Low Latitudes
- R-13 **Daniel Schmid** | An MMS Multicase Study of Magnetotail Dipolarization Fronts
- R-15 **Andrew Paul Sturmer** | An Investigation of Perpendicular Gradients of Parallel Electric Field in Separatrix Regions in Anticipation of the Magnetosphere Multiscale Mission
- R-16 **Masaaki Yamada** | Electron-scale Dissipation near the X-line During Magnetic Reconnection and the Upcoming FLARE (Facility for Laboratory Reconnection Experiments) Device
- R-18 **Levon A Avakov** | Observations of Counterstreaming Electron Fluxes in the Nightside Magnetosphere: First Results from MMS/FPI Data.
- R-19 **Katherine Goodrich** | First Observations of Kinetic Electric Field Events Observed by MMS in the Bursty Bulk Flow Region
- R-20 **Kristopher William Larsen** | The MMS Science Data Center: Operations, Capabilities, and Resources
- R-21 **John Dorelli** | Global and local properties of dayside magnetopause reconnection: Simulations and initial MMS results
- R-22 **Marc Swisdak** | The 3-D Structure, Evolution, and Dissipation of Reconnection-Driven Flow-Bursts

- R-23 **Daiki Koga** | Kinetic electric fields associated with the Earth's dayside magnetopause reconnection: THEMIS observations
- R-24 **Jason R Shuster** | Signatures of Magnetic Reconnection in 3D Electric Field MMS Data: Elucidating Particle Energization Throughout the Diffusion Region
- R-25 **Ivan Dors** | The Electron Drift Instrument (EDI) on MMS: Measurement Technique and Initial Results from Convection Studies in the Outer Magnetosphere
- R-26 **Naoko Takahashi** | Evolution and propagation of electric fields during magnetic impulses based on multi-point observations
- R-28 **Ioannis A. Daglis** | The role of Pc5 waves in relativistic electron losses through the magnetopause
- R-29 **Ioannis A. Daglis** | ULF Waves and Relativistic Electron Acceleration and Losses from the Radiation Belts: A Superposed Epoch Analysis
- R-30 **Jörg-Micha Jahn** | Thermal Oxygen Surges in Earth's Inner Magnetosphere During Geomagnetic Storms

FRIDAY, OCTOBER 02

- 8:00 a.m.– 8:40 a.m. **MMS Overview and Initial Results**
- 8:00 a.m. –8:40 a.m. **James L Burch** | MMS Overview and Highlights
- 8:40 a.m.– 12:30 p.m. **Friday Oral Presentations I**
Presiding: Thomas Moore
- 8:40 a.m. –9:10 a.m. **Thomas Earle Moore** | MMS Status and Early Results
- 9:10 a.m. –9:40 a.m. **Craig J Pollock** | First results from the Fast Plasma Investigation on the MMS Mission
- 9:40 a.m. –10:10 a.m. **Roy B Torbert** | First Results from the Electric and Magnetic Field Measurements on MMS
- 10:10 a.m. –10:30 a.m. Break

- 10:30 a.m. –11:00 a.m. **Robert Ergun** | Parallel Electric Fields, Magnetic Reconnection, Particle Acceleration, and Turbulence
- 11:00 a.m. –11:30 a.m. **Robert J Strangeway** | Reconnection Magnetic Fields, Expectations and Preliminary Magnetic Field Measurements from Magnetospheric Multiscale
- 11:30 a.m. –12:00 p.m. **Stephen A Fuselier** | First results from the Hot Plasma Composition Analyzer on the MMS mission
- 12:00 p.m. –12:30 p.m. **Michael Hesse** | The Transition from Symmetric to Asymmetric Magnetic Reconnection
- 1:30 p.m.– 6:30 p.m. **Friday Oral Presentations II**
Presiding: Craig Pollock
- 1:30 p.m. –2:00 p.m. **Tai Phan** | Identifying and Capturing of Magnetopause Reconnection Diffusion Region and Initial MMS Observations
- 2:00 p.m. –2:30 p.m. **Barbara L Giles** | MMS Science Operations, Science Data System, and Data Access
- 2:30 p.m. –3:00 p.m. **Daniel N. Baker** | Magnetospheric Multiscale: The Path from Magnetic Reconnection to Ultra-relativistic Particles
- 3:00 p.m. –3:30 p.m. **Olivier Le Contel** | First MMS measurements of the High Frequency Magnetic Waves
- 3:30 p.m. –4:00 p.m. **Rumi Nakamura** | Characteristics of flow bursts and dipolarization in the near-Earth magnetotail, including MMS initial results
- 4:00 p.m. –4:20 p.m. Break
- 4:20 p.m. –4:50 p.m. **Barry Mauk** | First results from the Energetic Particle Detector Investigation on the MMS Mission
- 4:50 p.m. –5:20 p.m. **J. F. Fennell** | MMS FLY'S EYE ELECTRON and PROTON SPECTROMETER (FEEPS) OBSERVATIONS
- 5:20 p.m. –5:50 p.m. **Martin V Goldman** | What do 2D PIC Simulations tell us about Magnetotail Reconnection?

5:50 p.m. –6:20 p.m.

Brian J Anderson | Electrodynamical Context of Magnetotail
Dynamics Signatures Observed by Magnetospheric Multi-Scal

6:20 p.m. –6:30 p.m.

Closing Remarks: Joe Kan and Jim Burch