ISR Science Highlights

Long title
Incoherent scatter radar science highlights and future applications
Conveners
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Description

This is part 2 of the ISR Workshop concurrent with CEDAR 2026.

The session will consist of a series of short presentations highlighting science enabled with incoherent scatter radars (ISRs), spanning ionospheric dynamics, plasma physics, and space weather applications. Afterwards, future directions and applications of ISRs will be discussed, including opportunities for cross-disciplinary and multi-instrument collaborations.

Agenda

16:00-16:10: Kevin Grazier - *Inferring Auroral Electron Energies and Fluxes from Optical Emission Ratios Using Rees and Luckey (1974)*

16:10-16:20: LTC Jacob Capps - *Three-Dimensional Ionospheric Reconstruction via GEANT4-Based Modeling of Auroral Electron Energy Deposition*

16:20-16:30: Phil Erickson - *Using ISRs to address outstanding issues in the subauroral and mid-latitude ionosphere*

16:30-16:40: Danny Scipion - *TBD*

16:40-16:50: Jodie McLennan and Allison Jaynes - *TBD*

16:50-17:00: COL Diana Loucks - *P5B – updates to the PFISR GPS 5-beam mode analysis and results*

17:00-17:10: Pablo Reyes - *PFISR Continuous D-region measurements*

17:10-17:20: Enrique Rojas Villalba - *Ongoing ISR Explorations in Theory and Data Driven Analysis*

17:20-17:30: Yizhe Zhang - *High-Latitude Conductance Modeling under Solar EUV Forcing*

17:30-17:40: Shunrong Zhang - *Incoherent scatter radar observations of subauroral dynamics at Millstone Hill: results from some recent geospace storm experiments*

17:40-17:50: John Swoboda (virtual) - *SimISR updates and Dual-band ISR Collections on Millstone Hill*

17:50-18:00: Feng Ding- Sanya ISR Facility Update

Virtual Information: https://njit-edu.zoom.us/j/91393477066?pwd=4Zcu1Ti9KsUhEpDuwFAbxj36c5qPpb.1

Meeting ID: 913 9347 7066
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Justification

This workshop will facilitate ISR science by identifying the state and direction of the ISR community, as well as action items to improve the community and dissemination of ISR associated materials. Furthermore, this workshop will generate research

collaborations through research talks (prioritizing students and early-career researchers), discussions on open scientific problems, and by building a cohort of people interested in ISR science.

Having a clearer understanding of ISRs and their role in CEDAR science will further benefit other communities, such as the Geospace Environment Modeling (GEM) community, the American Geophysical Union (AGU), the International Union of Radio Science (URSI), the American Physical Society-Division of Plasma Physics, and many more. Internationally, this workshop is timely and synergistic with the launch of EISCAT_3-D in Europe, which will be online soon.

Related to CEDAR Science Thrusts:
Encourage and undertake a systems perspective of geospace
Develop observational and instrumentation strategies for geospace system studies
Workshop format
Short Presentations
Keywords
ISR, World Day, Institutional Collaboration
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