BOSTON UNIVERSITY

Boston University College of Arts & Sciences
Center for Space Physics

2024—2025 SPACE PHYSICS SEMINAR SERIES

Solar Flare Energy Release: Recent Progress and Future Prospects

Solar flares and the often-associated solar eruptions are the most powerful energy release events in the solar system, capable of rapidly accelerating a significant fraction of available particles to high energies. Thanks to their proximity, solar flares can be observed with simultaneously high spatial, temporal, and spectral resolution over a broad range of wavelengths. The plethora of flare phenomena is attributed to a sudden reconfiguration of the coronal magnetic field known as magnetic reconnection. However, despite significant progress over decades of study, the detailed mechanisms underlying this explosive energy release and conversion remain unclear. A primary challenge stems from the difficulty in accurately measuring the rapidly evolving magnetic fields and tracing the highly mobile accelerated particles in the corona. Over the past decade, radio imaging spectropolarimetry has emerged as a powerful new tool to address some of the critical missing components. In this talk, I will review recent progress in understanding the flare energy release and the associated particle acceleration processes, with a focus on insights from the new radio observations. I will also discuss current limitations and future prospects in this field.

Thursday, September 12th

3:30-4:30 p.m.

725 Commonwealth Ave | Room 502

Bin Chen

New Jersey Institute of Technology