



College of Arts & Sciences

Center for Space Physics

Space Physics Fall Seminar Series

Magnetic Reconnection and Particle Acceleration in Space and Astrophysical Systems

Magnetic reconnection converts energy into high-speed flows, thermal and energetic particles in a broad range of systems both in the heliosphere and the broader universe. The most detailed measurements are within the heliosphere, which therefore acts as an effective laboratory for many issues related to reconnection. While the mechanisms for fast reconnection are now fairly well understood, the physics basis for the explosive onset of reconnection and the mechanisms for energy conversion are active topics.

The Parker Solar Probe (PSP) mission is producing unprecedented measurements in the solar wind close to the sun and is producing new insight on the role of reconnection in driving solar flares, heating the corona and driving the solar wind. The MMS mission continues to reveal the mechanisms that control particle energization during reconnection and reconnection dynamics at small space scales. The Voyager spacecraft continue to provide clues about reconnection in the outer heliosphere and the acceleration of Anomalous Cosmic Rays (ACRs).

New computational models are being developed to model the spectra of reconnection-driven energetic particles in macroscale systems. The basic physics of reconnection will be emphasized along with current ideas on the mechanisms for plasma heating and energetic particle production.



Jim Drake

University of Maryland

Thursday, September 24

3:30 - 4:30 PM

CAS 502