Space Physics Seminar

Thursday, October 20, 2016

C·S·P

Magnetic Reconnection: from the Sweet-Parker Model to Stochastic Plasmoid Chains

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Magnetic reconnection is the topological reconfiguration of the magnetic field in a plasma, accompanied by the violent release of energy and particle acceleration. Reconnection is as ubiquitous as plasmas themselves, with solar flares perhaps the most popular example.
Over the last few years, the theoretical understanding of magnetic reconnection has undergone a major paradigm shift. The steady-state model of reconnection described by the famous Sweet-Parker theory, which dominated the field for ~50 years, has been replaced with an essentially time-dependent, bursty picture of the reconnection layer, dominated by the continuous formation and ejection of multiple magnetic islands (plasmoids). This has led to a complete revision of the current understanding of reconnection and its observable signatures, with deep implications for astro, space and laboratory reconnection sites.
This talk aims to review the recent developments in reconnection that led to this essentially new framework, and discuss the outstanding challenges that remain at the frontier of this subject.

4:00pm in CAS 502. *Refreshments served at 3:45pm in CAS 500.*

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Next Week
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