

Center for Solar and Terrestrial Physics, NJIT. Spring 2008 Seminar Series.
Location: Physics Conference room T#453. Time: each second Thursday,
2:30pm.

1. Title: *EIT waves: Observations and Modelings*

Speaker: *Dr. P. F. Chen (Nanjing University)*

Abstract:

EIT waves are intriguing phenomena, which was found to be always associated with CMEs. Though it is useful for space weather forecast, the understanding of the wave-like phenomenon provoked a lot of debates. In this talk, I'll present the typical observational features of EIT waves and various models developed in recent years.

Scheduled: March 27, 2008

2. Title: *Coherent solar radio bursts: spike statistics in the spectral domain*

Speaker: *Gregory Fleishman*

Abstract:

This is one of two sequential talks, the second one, by Dr. Gelu Nita, is scheduled for April 24. I will briefly describe various types of the solar coherent bursts, discuss what is the spike burst, and what we can learn from the detailed analysis of the spike spectral properties.

Scheduled: April 10, 2008

3. Title: *Spike decomposition technique: modeling and performance tests*

Speaker: *Gelu M. Nita*

Abstract:

We develop an automated technique for fitting the spectral components of solar microwave spike bursts, which are characterized by narrow-band spectral features. The algorithm is especially useful for periods when the spikes occur in densely packed clusters, where the algorithm is capable of decomposing overlapping spike structures into individual spectral components. To test the performance and applicability limits of this data reduction tool, we perform comprehensive modeling of spike clusters

Scheduled: April 24, 2008

4. Title: *Spatiotemporal Event Decomposition (STED) for Solar and Magnetospheric Physics*

Speaker: *Vadim M. Uritsky (videoconference from BBSO, VIDEO Conference room GITC 1402)*

Abstract:

In this talk, I will present an overview of a novel approach for quantifying multiscale intermittency in space plasmas. The approach is based on spatiotemporal decomposition of a continuum time-dependent turbulent field into a set of discrete dissipation events. The event is defined as a single burst of local intermittency or, more generally, as any free energy release process localized both in space and in time. The STED output - a searchable database composed of many such events - provides a comprehensive representation of the intermittent component of the studied dynamics while dramatically reducing the amount of stored information needed for a subsequent data analysis. The latter can be focused on both ensemble-averaged statistical description of the events or their specific physical and geometrical signatures investigated on a case-by-case basis. The proposed approach is illustrated by several examples, including flaring activity in the solar corona, electron precipitation events in the auroral zone, and bursty magnetic energy transport in driven plasma sheet simulations. In each of these applications, STED has provided significant new information about the scaling regimes, predictability, correlation patterns and the underlying thermodynamic states of the studied systems.

Scheduled: May 8, 2008

5. Title: *Contraction of flaring loops — the evidence of magnetic reconnection in sheared core fields*

Speaker: *Haisheng Ji* (PMO Nanjing, China & NJIT)

Abstract:

Observational evidences for the contraction of flaring loops will be reported. The physical significance of the contraction is quite different from usual picture of flare loop shrinkage (e.g. from cusp structure to round-shaped magnetic loop). We find that such a kind of contraction is the signature of magnetic reconnection between highly-sheared flux ropes.

Scheduled: May 22, 2008