

### **WG3 WG1 WG2 Sessions 1 & 2: End-to-End Modeling of CMEs and SEPs**

#### **WG3 Session 3: Sources of Suprathermal Ions in the Solar Corona and the Interplanetary Medium**

Recent observational evidence indicates that the seed population for CME-driven interplanetary shocks and corotating interaction regions (CIRs) originates from a dynamic and highly variable pool of suprathermal material whose energy region lies above that of the bulk or thermal solar wind. Many sources, such as CME-shock accelerated ions, impulsive flares, interstellar and inner source pick-up ions, and the heated solar wind are expected to contribute in this energy regime. However, key properties such as ion composition and distribution functions of this population have not yet been fully explored primarily due to the lack of sophisticated and sensitive composition measurements covering the energy range between ~2-10 times the solar wind speed. This session will combine and compare critical new measurements obtained by solar wind, suprathermal, and energetic particle composition instruments on board ACE, Wind, and SoHO, and discuss the importance of roles played by various physical mechanisms such as acceleration at shocks and compression regions, statistical acceleration in the interplanetary medium, and reconnection during solar flares, in producing key observational features of the suprathermal ion population.

#### **Confirmed Invited Speakers:**

Matthew Hill, UMd  
George Ho, APL  
Thomas Zurbuchen, U of Michigan  
Nathan Schwadron, SwRI  
Len Fisk, U of Michigan

#### **WG3 Session 4: Mechanisms of Particle Acceleration near the Sun**

This session focuses on general acceleration mechanisms near the Sun and in the inner heliosphere. Because of a lack of *in situ* measurements near the Sun, no single acceleration mechanism has emerged as being dominant. For example, at impulsive flares, stochastic acceleration has received much attention; while the theory of shock acceleration has been invoked to understand particle acceleration at shock waves driven by coronal mass ejections. In addition, particle acceleration in regions of magnetic reconnection has also received much attention, as has acceleration at parallel electric fields. Recent observations have revealed general characteristics of solar-energetic particles that may give insights into identifying these acceleration mechanisms. These include, the unusual abundance enhancements (and their dependence on particle energy) of heavy and ultra-heavy ions, and the sharp cutoff in the energy spectrum of accelerated particles (both ions and electrons). The goal of this session is to

bring together theorists, modelers, and experimentalists to discuss the observations and current acceleration theories.

#### **Confirmed Invited Speakers:**

Jim Miller, University of Alabama, Huntsville  
Yuri Litvinenko, University of New Hampshire  
Randy Jokipii, University of Arizona  
Chee Ng (NASA)  
Vahe Petrosian, Stanford University

#### **WG3 Session 5: Effects of the Sun on the Outer Heliosphere**

The main goal of this session is to investigate and characterize the global effects of the Sun as seen in the outer heliosphere. For instance, the effects of many of the largest solar energetic particle events of cycle 23 e.g., the Halloween events of 2003, have been observed in the outer heliosphere at *Voyager*. In addition, recurrent ~26-day structures have also been observed as far away as Voyager 1 at nearly 100 AU from the Sun. The invited talks and working-group discussion will center on the spatial and temporal evolution of transient and recurrent structures as observed at *Ulysses*, *Voyager*, and *Pioneer* spacecraft, and on current modeling of these events.

#### **Confirmed Invited Speakers:**

John Richardson, MIT  
Trevor Sanderson, ESA/ESTEC  
Devrie Intriligator, Carmel Research  
Nathan Schwadron, SWRI