

JOINT ASTRONOMY / EPS COLLOQUIUM

March 5, 2009

3:30pm Tea in 661 Campbell Hall

4:00pm colloquium in 1 Le Conte

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The SECCHI Experiment on the STEREO Mission

Abstract:

The Sun Earth Connection Coronal and Heliospheric Investigation (SECCHI) on the NASA Solar Terrestrial Relations Observatory (STEREO) mission is a suite of remote sensing instruments consisting of an extreme ultraviolet (EUV) imager, two white light coronagraphs, and two telescopes that comprise the heliospheric imager. SECCHI observes coronal mass ejections (CMEs) from their birth at the sun, through the corona and inner heliosphere. A complete instrument suite is being carried on each of the two STEREO spacecraft, which will provide the first sampling of a CME from two vantage points. The spacecraft, launched 25 October 2006, are orbiting the Sun, one Ahead of the Earth and the other Behind, each separating from Earth at about 22 degrees per year, so that they are now separated by about 90 degrees. The primary science objectives are focused on understanding the physics of the CME process – their initiation, 3D morphology, propagation, interaction with the interplanetary medium and space weather effects. By observing the CME from multiple viewpoints with UV and coronagraphic telescopes and by combining these observations with radio and *in_situ* observations from the other instruments on STEREO as well as from other satellites and ground based observatories operating at the same time, answers to some of the outstanding questions will be obtained. All of the telescopes are working very well and have been producing spectacular images. The panoramic view of the inner solar system is unprecedented. Perhaps the most intriguing and perhaps surprising observations have been the ability to image the fluctuations of the solar wind, the interactions of the solar wind with comet tails and the imaging of the compression ahead of high speed streams which form the corotation interaction regions (CIRs). The STEREO mission is certainly providing a global view to what up to now has been based on *in-situ* measurements. We will show examples of some of the data and some of the results.