On the three dimensional view of Coronal Mass Ejections using SECCHI/STEREO observations

Nandita Srivastava

Udaipur Solar Observatory, Physical Research Laboratory, Udaipur, India

Coronal Mass Ejections (CMEs) are large-scale eruptions of magnetized plasma ejected from the Sun into the interplanetary space. If they are directed earthward and their magnetic field is favourable they can lead to major geomagnetic storms when they hit the Earth's magnetosphere. With the launch of STEREO spacecraft in 2006, it is now possible to estimate the three dimensional structure of the CMEs, from which their true speed and direction of propagation can be derived.

In this talk, I will describe various reconstruction techniques that are currently being used to model the 3-D configuration of CMEs based on the images captured by the SECCHI coronagraphs onboard STEREO. These will include the 3-D reconstruction of the source regions of the CMEs i.e. the active regions and filaments using EUVI images, the white light CMEs as observed by coronagraphs (COR 1 and COR2) and Heliospheric imagers (H11 and H12). A comparison of the results obtained from the application of different reconstruction techniques to the CMEs and their source regions will be made. The implication of these results in understanding the initiation and the propagation of the CMEs, as well as in estimating their arrival times at the Earth will also be discussed.