



Physical Research Laboratory, Ahmedabad

Colloquium 15-07

- Speaker:** Mr. Wageesh Mishra
Senior Research Fellow, Udaipur Solar Observatory, Udaipur, PRL.
- Title:** “Kinematics and Consequences of Coronal Mass Ejections in the Heliosphere”
- Time:** Wednesday, 25 March 2015, 16.00 hrs.
- Venue:** K. R. Ramanathan Auditorium, PRL

Abstract

Coronal mass ejections (CMEs) are the most energetic eruptive phenomena occurring in the heliosphere. Investigating their heliospheric evolution and consequences is critical to understanding the solar-terrestrial relationship. Prior to the development of wide-angle imaging of the heliosphere, the studies about propagation of CMEs was limited to analysing their plane-of-sky projected remote observations within few solar radii of the Sun, and in situ observations in the vicinity of the Earth. Also, the kinematics of CMEs can change significantly in interplanetary medium in case of two or more CMEs interaction/collision or strong aerodynamic drag experienced by CMEs with ambient solar wind. Heliospheric Imagers (HIs) on-board STEREO providing multiple views of CMEs in the heliosphere, for the first time, have filled the vast and crucial observational gap between near the Sun and the Earth. Therefore, the 3D kinematics of CME, from its lift-off in the corona to the Earth or even beyond, can be estimated by implementing 3D reconstruction methods on STEREO observations. In this talk, I will discuss about the continuous tracking and estimation of 3D kinematics of CMEs in the heliosphere using HIs data. The use of 3D kinematics of CMEs to predict their arrival time at the Earth will also be presented. In my talk, I will focus on the evolution and consequences of the interacting/colliding CMEs in the heliosphere using their remote and in situ observations. We have also studied the pre- and post-collision dynamics, momentum and energy exchange between the CMEs during the collision phase. My talk will show the need of longer tracking of CMEs in the heliosphere and use of their post-collision dynamics for the purpose of improved arrival time prediction of CMEs at the Earth.

The Speaker

Mr. Wageesh Mishra obtained B.Sc. from MGPG College affiliated to DDU Gorakhpur University and M.Sc. from the Physics department of Gorakhpur University. He then joined PRL in 2010 as a research fellow. After the completion of course work for JRF at PRL, he joined USO in 2011 for his doctoral work under the supervision of Prof. Nandita Srivastava. Recently, he has submitted his Ph.D. thesis to Mohanlal Sukhadia University (MLSU), Udaipur. Mr. Mishra's Ph.D. thesis work was focused on understanding the propagation of Coronal Mass Ejections (CMEs) and their consequences on the Earth's magnetosphere by exploiting the remote and in situ observations of CMEs as well as geomagnetic field data. He has published 5 papers in peer reviewed journals. His current research interests are evolution of CMEs, solar wind drag, CME-CME interaction, and space weather.

Tea at 15:30 hrs.
ALL ARE WELCOME

