



The Response Time of the Magnetopause Reconnection Location to changes in the Solar Wind: MMS Case Study

Karlheinz Trattner (1), James Burch (2), Robert Ergun (1), Stephen Fuselier (2), Roman Gomez (2), William Lewis (2), Barry Mauk (3), Steven Petrinec (4), Craig Pollock (5), Tai Phan (6), Frederick Wilder (1), and Dave Young (2)

(1) University of Colorado, LASP, Boulder, United States (karlheinz.trattner@lasp.colorado.edu), (2) Southwest Research Institute, San Antonio, Texas, USA, (3) Applied Physics Laboratory, Johns Hopkins University, Maryland, USA, (4) Lockheed Martin ATC, Palo Alto, USA, (5) NASA/GSFC, Maryland, USA, (6) University of California, Berkeley, USA

Reconnection at the Earth's magnetopause is the mechanism by which magnetic fields in different regions change topology to create open magnetic field lines that allow energy, mass and momentum to flow into the magnetosphere. It is the primary science goal of the recently launched MMS mission to unlock the mechanism of magnetic reconnection with a novel suite of plasma and field instruments. This study will investigate several magnetopause crossings in the general vicinity of the magnetopause reconnection location on September 19, 2015. These crossings occurred during rotations of the IMF and are used to determine the response time of the reconnection locations to such changes. The study shows that the reconnection location exhibits a tendency to remain at its current location despite significant rotations in the IMF and responds only minutes later to changes in the IMF.