Geophysical Research Abstracts
Vol. 19, EGU2017-9603, 2017
EGU General Assembly 2017

MMS FEEPS Energetic Electron Microinjection Observations during 2015 and 2016

Joseph F. Fennell (1), Drew L. Turner (1), Colby L. Lemon (1), Allison Jaynes (2), JBernard Blake (1), James H. Clemmons (1), Daniel N. Baker (2), Barry H. Mauk (3), Ian J. Cohen (3), Harlen E. Spence (4), Shiva Kavosi (4), and James L. Burch (5)

(1) The Aerospace Corporation, Los Angeles, CA, USA (Joseph.F.Fennell@aero.org), (2) LASP University of Colorado, Boulder, CO, USA, (3) Johns Hopkins Applied Physics Laboratory, Laurel, MD, USA, (4) University of New Hampshire, Durhan, NH, USA, (5) Southwest Research Institute, San Antonio, TX, USA

During the first and second MMS traversals of the midnight to dusk local time regions energetic electron data showed many clusters of electron injections we call microinjections because of their short duration signatures. These microinjections of 50–400 keV electrons have energy dispersion signatures indicating that they gradient and curvature drifted from earlier local times. Multiple clusters of microinjections occurred during these traversals. We show detailed results from some microinjections taken with burst mode data. These high temporal resolution data showed that the electrons in the microinjections were trapped and had bidirectional field-aligned angular distributions. Drift calculations constrained by the observed electron dispersion times indicate the electrons had drifted from near the magnetopause hours earlier in local time. They were seldom observed as the MMS apogee passed from dusk through the post noon to noon regions. They were not observed in the midnight through dawn to the pre-noon regions. We provide statistics on the occurrence of the injections and discuss possible sources and implications. These injection clusters are a new phenomenon in this region of the magnetosphere.