Geophysical Research Abstracts
Vol. 12, EGU2010-12042, 2010
EGU General Assembly 2010

In-Situ Observations of Energetic Electron Acceleration in the Near-Earth Flow Braking Region

Alessandro Retinò (1) and the Cluster Magnetotail Team

(1) Austrian Academy of Sciences, Space Research Institute, Graz, Austria (alessandro.retino@oeaw.ac.at, +43 316 4120590), (2) New Jersey Institute of Technology, Newark, USA, (3) Institute of Space and Astronautical Science, JAXA, Sagamihara, Japan, (4) Swedish Institute of Space Physics, Uppsala, Sweden, (5) MPS-MPG, Lindau, Germany , (6) LPP-CNRS, Paris-Palaiseau, France, (7) MSSL, London, UK, (8) CESR-CNRS, Toulouse, France

The flow braking region in the near-Earth magnetotail is a key region where the interaction of fast earthward reconnection flows with the dipolar magnetic field is associated with substantial energetic particle acceleration. Here we focus on the acceleration of suprathermal electrons. We show multi-scale Cluster spacecraft observations during one substorm event. The braking of fast flows is associated with non-MHD scale magnetic field fluctuations, that are comprised of thin current layers where substantial acceleration up to $\sim$400 keV occurs locally. We discuss the acceleration mechanisms and the possible role of such non-MHD mechanisms for electron acceleration in solar flares.