



Reconstruction of FTE from observations with THEMIS

A. T. Y. Lui (1), D. G. Sibeck (2), T. Phan (3), V. Angelopoulos (4), J. McFadden (3), C. Carlson (3), D. Larson (3), J. Bonnell (3), K.-H. Glassmeier (5), S. Frey (3)

(1) JHU/APL, Maryland, USA (Tony.Lui@jhuapl.edu), (2) NASA/GSFC, Maryland, USA, (3) UC Berkeley, California, USA, (4) IGPP/UCLA, California, USA, (5) IGEP, TU, Braunschweig, Germany

We investigate a magnetic flux rope (MFR) observed by THEMIS near the duskside magnetopause on 20 May 2007 using the reconstruction technique based on solving the Grad-Shafranov equation. The MFR has characteristics distinct from the adjacent magnetosheath and magnetosphere regions. In spite of these differences, the reconstruction result shows for the first time that the MFR is connected simultaneously with both the magnetosheath and the magnetosphere in terms of the magnetic vector potential characteristics. This result provides strong evidence that the MFR represents the union of these two regions. It has a small spatial dimension of $< 0.5 R_E$, a strong core magnetic field of > 50 nT, and an intense axial current density of > 40 nA/m².