



Saturn's elusive transpolar arc

Aikaterini Radioti (1), Denis Grodent (1), Jean-Claude Gérard (1), Steve Milan (2), Robert Fear (2,3), Caitriona Jackman (3), Bertrand Bonfond (1), and Wayne Pryor (4)

(1) University of Liege, Laboratory of Planetary and Atmospheric Physics, Liege, Belgium (a.radioti@ulg.ac.be), (2) Department of Physics and Astronomy, University of Leicester, Leicester, UK, (3) Department of Physics and Astronomy, University of Southampton, Southampton, England, (4) Science Department, Central Arizona College, Coolidge, Arizona, USA

Variations of the polar auroral emissions in response to magnetic reconnection provide evidence of the mechanisms which couple solar wind mass, energy and momentum into the magnetosphere. A signature of magnetosphere-ionosphere coupling related to tail reconnection and one of the most spectacular auroral emissions at Earth is the transpolar arc or 'theta aurora'. It represents the optical emission associated with closed field lines embedded within a region of open magnetic field lines (polar cap). Here we report the discovery of a transpolar arc at Saturn from UVIS Cassini spacecraft observations. We discuss the possibility the transpolar arc at Saturn is related to tail reconnection similar to Earth and we address the role of solar wind in the magnetotail dynamics at Saturn.