Geophysical Research Abstracts
Vol. 13, EGU2011-5897, 2011
EGU General Assembly 2011

Bifurcations of the main auroral ring at Saturn: ionospheric signature of flux transfer events?

Aikaterini Radioti (1), Denis Grodent (1), Jean-Claude Gérard (1), Steve Milan (2), Jacques Gustin (1), Bertrand Bonfond (1), and Wayne Pryor (3)

(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) Science Department, Central Arizona College, Coolidge, Arizona, USA.

The main auroral ring at Saturn is suggested to be associated with the open closed field line boundary. Auroral data from the UVIS instrument onboard Cassini reveal bifurcations of the main ring and the formation of arc-like structures poleward of the main emission. Among other examples we present a sequence of UVIS images taken every several minutes in July 2008. The sequence starts with an intensification of the main emission close to noon possibly pointing out to a signature of dayside reconnection. It continues with consecutive bifurcations of the main auroral ring and formation of consecutive transient polar arcs in the dusk auroral sector. We study the evolution of the features and the associated changes in the polar cap as a function of time. Given the similarities of the auroral features at Saturn with those at Earth (and potentially at Jupiter) we discuss the possibility that the polar auroral arcs at Saturn are signatures of flux transfer events. Additionally, the observed properties of the bifurcations imply an expansion of the reconnection x-line along the flank of the magnetopause of Saturn.