Geophysical Research Abstracts, Vol. 7, 06283, 2005
SRef-ID: 1607-7962/gra/EGU05-A-06283

Auroral signatures of lobe reconnection observed simultaneously in the conjugate hemispheres

N.Ostgaard (1), S. B. Mende (2), H. U. Frey (2),J. B. Sigwarth (3)

(1) Department of physics and technology, University of Bergen, Norway (Nikolai.Ostgaard@ift.uib.no [+47 5558 2794]), (2) Space Sciences Laboratory, University of California, Berkeley, California, USA(3) Goddard Space Flight Center, Greenbelt, Maryland, USA

Due to the apsidal precession of the Polar orbit while IMAGE still had its apogee in the northern hemisphere, the cusp aurora associated with high latitude lobe reconnection was imaged simultaneously in the conjugate hemispheres for two short periods in 2000 and 2001. These very rare images were taken during strongly northward IMF and high solar wind pressure where both the proton and electron aurorae are fairly bright, dominated by $\sim$8 keV protons and 0.5-1 keV electrons. As predicted by theory, the longitudinal asymmetric location of the cusp aurora is strongly controlled by the IMF By component. The southern cusp aurora is observed several degrees poleward of the northern cusp aurora and can be attributed to either a tilt effect or an IMF Bx effect. These very first simultaneous observations from the conjugate hemispheres of auroral signatures of magnetic reconnection also demonstrate the potential to examine what causes the differences in reconnection rate, relative energy and momentum transfer in the conjugate hemispheres.