



Bi-directional electron distributions as tracers for the open-closed field line boundary in Saturn's magnetosphere

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Abstract

In this presentation we use bi-directional energetic electron distributions from the MIMI-LEMMS instrument onboard Cassini, auroral observations from the Hubble Space Telescope (HST) and data from the UVIS instrument onboard Cassini to characterize the open-closed field line boundary in Saturn's magnetosphere. The high-latitude open-closed field line boundary at Saturn is thought to be related to the main auroral ring of emission of the planet varying in location, intensity and latitudinal extent as well as in its homogeneity. This study extends the work on the plasmopause/open-closed field line boundary published by [1] by covering a larger data set at different local times and comparing the electron distributions with auroral observations. Based on energetic electron data we characterize the open-closed field line boundary in terms of temporal, local time variations and other parameters and we correlate the Cassini in-situ measurements to the observations of the main auroral ring at Saturn.

References

[1] Gurnett, D. A., et al. (2010), A plasmopause - like density boundary at high latitudes in Saturn's magnetosphere, *Geophys. Res. Lett.*, 37, L16806, doi:10.1029/2010GL044466.