

Cassini Observations of Saturn's Magnetospheric Cusps

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Abstract

Magnetopause reconnection allows magnetosheath plasma to be directly injected into the magnetosphere along newly opened field lines. The cusp is a funnel shaped region in the high latitude dayside magnetosphere which is the entry layer for these particles. The Earth's magnetospheric cusps were first detected in the 1970s [1,2]. Velocity filtering of ions were observed leading to energy-latitude [1,3] and energy-pitch angle [4] dispersions of ions which were interpreted as the result of dayside and lobe reconnection. Auroral and theoretical evidence for the cusp at Saturn has been presented [5,6] and the (geometric) high-latitude cusp has been directly detected in Cassini in situ data [7,8]. In this study we have been conducting a survey of cusp signatures and in this poster we present several case studies of cusp signatures, extended the work of [8] to the (geometric) mid-altitude cusp. In particular we study the ion dispersions, reconstruct the geometry of precipitating particle layers and consider the bi-directionality of electrons as was observed by *Saur et al.* (2006) [9] on closed field lines, and see it disappear on open-field lines in the cusp.

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