

Electron density observations from Cassini RPWS in the Enceladus torus

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One of Cassini's most exciting results is a detection of a plume which expels water vapor and ice grains from south pole of the moon Enceladus [Dougherty et al., 2006; Spahn et al., 2006; Porco et al., 2006; Waite et al., 2006]. This water creates an extended torus around Saturn. A large amount of gas is ionized within the plume and becomes the major source of plasma for E ring and Saturn's magnetosphere. The inner magnetosphere consists of a dense and cold plasma in the shape of a disk [Persoon et al., 2005]. Recently, observations from Cassini Radio Plasma Wave Science (RPWS) revealed the presence of dusty plasma and indicate the interaction between plasma disc and dusty plasma E ring [Morooka et al., 2011]. However, these observations were only near Enceladus. We investigate the plasma distribution on Enceladus orbit. We use Cassini RPWS data and analyze the electron densities in the Enceladus torus, and plan to analyze the azimuthal distribution of Enceladus.