



N⁺ in saturn's inner magnetosphere

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We have detected N⁺ in Saturn's magnetosphere in data collected by the Cassini Plasma Science (CAPS). Because Voyager could not separate oxygen and nitrogen, there has been considerable controversy on nitrogen's presence and relative importance. Two principal sources have been suggested: Titan's atmosphere and nitrogen species trapped in Saturn's icy satellite surfaces (Sittler et al 2004). The latter may be primordial nitrogen, likely as NH₃ in ice (Stevenson 1982; Squyers et al. 1983) or nitrogen ions that have been implanted in the surface (Delitsky and Lane 2002). We present the spatial distribution of N⁺ detected along the orbital plane from ~4 to ~8 Saturn Radii (R_s) both on the inbound pass for the Saturn Orbit Insertion (SOI) and on the inbound & outbound passes of next Cassini orbit (Rev A) with ion counts increasing toward Saturn. We also present initial analysis of the possible source of these ions.