



## **Interchange Stability at Saturn and the role of electron density**

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Interchange events, where “injections” of hotter, less dense plasma move inward to return the magnetic flux carried outward by the colder, more dense plasma are common in rapidly rotating magnetospheres. The Cassini spacecraft detects these injections on almost every orbit of Saturn that encounters the inner and middle (<15  $R_s$ ) magnetosphere. Significant changes often occur in the number of injection events and the location they are detected (L shell) between inbound and outbound passes on a given Cassini orbit. Furthermore, differences are observed between consecutive orbits for the same local time sampling. Similar variations between inbound and outbound passes, and between orbits have been observed in the electron density values measured by Cassini. We examine the relationship between the observed electron plasma density and characteristics of the injection events as detected by the Cassini Plasma Spectrometer (CAPS) and Magnetospheric Imaging Instrument (MIMI) for a series of near equatorial orbits between L of about 4.5 to 10 with the inbound primarily in the midnight sector and the outbound in the noon sector.