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Spin-Period Signatures in Cassini Magnetic Field and Particle Data

J. Goldstein (1), J. L. Burch (1), P. Mokashi (1), D. Young (1), J. Leisner (2), C. T. Russell (2), M. K. Dougherty (3)

(1) Southwest Research Institute, Space Science and Engineering Division, San Antonio, TX 78238 USA, (2) University of California Los Angeles, Institute of Geophysics, Los Angeles, CA 90095 USA, (3) Space and Atmospheric Physics, Imperial College, London, SW7 2AZ UK [jgoldstein@swri.edu]

Magnetic field residuals and plasma fluxes recorded at distances beyond 15 Saturn radii (RS) by the Cassini MAG and CAPS instruments (respectively) contain clear evidence of magnetic and plasma signatures that recur at or near the period of Saturn's rotation. This periodic behavior is consistent with multiple current-sheet crossings at distances below about 30 to 40 RS, and magnetic reconnection events at greater distances. Using a semi-automated spectral technique the detailed spatial dependence of the spin-period signatures is explored, and the results are compared with a simple analytical model of the Saturnian current sheet. The investigation includes all spatial (radial, latitudinal, local time, and longitudinal) dependences of occurrence and frequency.