

Cassini SOI: Magnetometer data re-analysed

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Abstract

The Cassini Saturn Orbit Insertion (SOI) on June 30 2004 marked Cassini's closest approach to Saturn in the mission so far. In advance of the proximal orbits it is appropriate to re-examine in preparation for the proximal orbit mission phase. SOI was the only occasion so far that Cassini has been on magnetic shells mapping to the A and B rings. At periapsis ($r = 1.33 R_S$, $\lambda = 15^\circ$) it was magnetically conjugate to the inner edge of the C ring. It cannot be ruled out that the observed field inside $L \approx 1.5$ is partly due to the longitude dependent internal field. g_{11} is a primary target and should show up in the data in special manner in part because of the spacecraft switch from retrograde to prograde motion around $L \sim 2$. Accordingly, for a source rotating at around 10.5-10.7 h., the spacecraft would sample azimuthal phase three times. This is illustrated here for the external cam source (G_{11}) where the effect is dramatic as the amplitude does change with r . We show in particular that the cam fields appear to extend into the regime over the rings.