



Cassini and Saturn's magnetic field: In-orbit observations

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Insertion of Cassini into Saturn orbit produced vector magnetometer measurements of the planetary field after a lapse of more than 20 years. The close passage by Saturn at orbit insertion and the large apoapsis distance of the first orbit produced the equivalent of a fourth flyby comparable to those of the earlier Pioneer 11 and Voyager 1, 2 missions. Analysis of Cassini data revealed little, if any, secular variation in the axial dipole, quadrupole and octupole moments. However, other important questions and scientific objectives were left for future observations. As the mission has proceeded, more measurements are accumulating providing improved coverage in radial distance, longitude and latitude as well as highly accurate measurements of the field magnitude by the Scalar Helium Magnetometer. The recent measurements extend the investigation of departures from axial symmetry and the pursuit of higher degree magnetic moments. They are also enabling further investigation of an intermittent periodicity in the magnetic field that may be related to the rotation of the fluid core and could lead to an accurate determination of the rotation period.