

THE STRUCTURE OF TITAN'S INDUCED MAGNETOSPHERE

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As a result of the virtual absence of an intrinsic magnetic field, Titan's atmosphere directly interacts with Saturn's rotating magnetosphere. The obstacle to the external plasma flow represented by the moon's collisional ionosphere and the exospheric heavy ions that mass load the external plasma flow leads to the formation of an induced magnetosphere characterized by magnetic field pileup in the sub-flow sector and strong draping in the flanks and downstream sector. We use Cassini magnetometer and plasma observations obtained over more than 4 years to characterize the spatial extent, orientation and shape of Titan's induced magnetosphere above 950 km altitude. The role of parameters such as Saturn Local Time (SLT), and convective electric field is studied. We also compare the magnitudes of the dynamic, magnetic and plasma pressures at different altitudes.

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