

Cassini observation of Titan interaction with Saturn's magnetosphere

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Titan, the non-magnetized Saturn's satellite, directly interacts with the magnetospheric plasma corotating with the planet. Consequently, ions, electrons and neutral particles in Titan's atmosphere escape into Saturn's magnetosphere and form the titan torus along its orbital path. Many model calculations have been made about the interaction between Titan and Saturn's magnetosphere. On the other hand, observation of Titan was only once by Voyager 1. Lack of observations had prevented us to develop our understandings about escaping processes of the atmosphere, an amount of the escaping gas and presence of the torus. However, the Cassini spacecraft has started to observe the Saturn system since 2004 providing fruitful data set.

In this paper, we report analyses of the Cassini data which reveal the magnetic field structure around Titan and the presence of high energy electrons at the Titan's orbital path.