

TITAN'S PLASMA TAIL – COMPARISON OF CASSINI MEASUREMENTS AND HYBRID MODEL RESULTS

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Titan hosts a uniquely interesting interaction that takes as the rotating plasma of Saturn's magnetosphere encounter Titan's ionosphere and extended atmosphere. By studying one of Cassini's flybys of Titan, we show that Titan's plasma interaction is highly sensitive to changes in the fraction of oxygen ions in the plasma flow.

Simulations with HYB-Titan model show that the crosswise extend of the magnetic and ion tail of Titan is effected by the flow composition. Comparisons of the simulation results with the multi-instrument measurements by Cassini demonstrate the validity of the simulation results and provide an estimate of the oxygen density in the ambient plasma flow.

Three plasma instruments onboard the Cassini spacecraft were used for the comparisons, namely the Cassini Plasma Spectrometer (CAPS), the Langmuir Probe of the Radio and Plasma Wave Science, and the Cassini Magnetometer.

[1] I. Sillanpää et al., Cassini Plasma Spectrometer and Hybrid Model Study on Titan's Interaction: Effect of Oxygen Ions, submitted to Journal of Geophysical Research – Space, 2011.



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