

INMS Measurements of Titan's Ionosphere

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The composition of Titan's ionosphere was measured for the first time on 18 April 2005 during a close pass by the Cassini spacecraft through Titan's upper atmosphere. Although the closest approach to Titan occurred in darkness, near midnight, the Ion Neutral Mass Spectrometer (INMS) detected approximately 50 ion species, far more than predicted by pre-Cassini models. The lifetime of ions in Titan's upper atmosphere is short and the existence of a robust ionosphere on the nightside implies significant energy input from a non-solar source, such as precipitation of energetic charged particles from Saturn's magnetosphere. Identification of some ion species will be presented and the implications for energy input and neutral composition will be discussed.