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Characteristics of Atomic and Molecular Nitrogen Ions in the corona of Titan observed by Cassini Plasma Spectrometer

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The first Titan flyby of Cassini Spacecraft occurred on October 26, 2004. The closest approach was 1174 km above the surface of Titan. There were two more close flybys on December 13, 2004 and February 15, 2005. Cassini plasma spectrometer measured electrons and ions as a function of energy and angle. The plasma flows decelerated significantly as the spacecraft approached Titan and very cold plasma was observed close to the exobase. These observations made during the Titan flybys are used here to study the energies and angular distribution of atomic and molecular Nitrogen ions close to the exobase of Titan as these are very important in sputtering the atmosphere of Titan. The effect of these ions in sputtering the atmosphere of Titan and the escape of nitrogen from the upper atmosphere of Titan will also be presented.