

Satellite Exospheres in the Saturnian System

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The early results from the Cassini mission at the Saturnian system suggested that the whole satellite system and the magnetosphere are embedded in a huge neutral gas cloud of satellite and ring origin. At Titan the atmospheric loss of the hydrogen gas should be driven by Jeans escape and nonthermal process related to interaction with the surrounding plasma. For the icy satellites such as Mimas, Enceladus and Dione, surface sputtering effect by energetic charged particles, photosputtering and dust impact could be the source mechanisms. In this work we will follow previous theoretical studies in developing generic models of satellite exospheres from which the production of energetic neutral atoms (ENA) and charged particle absorption effects might be compared with the Cassini measurements.