

Examining Titan's hydrogen exosphere by Monte Carlo simulation of the hydrogen Lyman-Alpha profile

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We present first results of a newly developed Monte Carlo model to investigate Titan's hydrogen Lyman-Alpha emission.

We focus on the Lyman-Alpha profile of atomic hydrogen in the exosphere of Titan to investigate the (i) radiative transfer and (ii) the current upper atmospheric structure.

A Monte Carlo model has been developed for the simulation of Lyman-Alpha line profiles. The Chamberlain model is used for the Titan atomic hydrogen density profile. The model describes resonantly scattered Lyman-Alpha photons in the exosphere. It statistically simulates the expected line profile during the Cassini spacecraft encounter T9 with Titan on Dec 25th, 2006.

In our talk, we will compare our Monte Carlo results with T9 observation data measured by HDAC onboard Cassini.