



Test particle modelling of ion transport and sources in Saturn magnetosphere, initial results.

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The present work is a first attempt to study the transport of ions in Saturn's magnetosphere and determine their potential sources. Using the published CAPS/IMS measurements on the CASSINI orbiter as input, we use a test particle simulation code to trace the ion trajectories backwards in time from the observation point. This is first applied to N⁺ ions and to ions of the water group that were detected in the energy range from 20 to 100 eV in the region from L=3 to 8 Saturn's radii. They exhibit an energy distribution as a function of L characteristic of a co-rotating plasma. Results from this computation are compared to the position of possible sources such as the icy satellites or Titan in order to investigate whether they can be the ultimate sources of the ions. Improvements of the model are underway to take into account wave-particle interactions and simulate in a more realistic way the particle transport.