Geophysical Research Abstracts,
Vol. 10, EGU2008-A-05557, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-05557
EGU General Assembly 2008

Suprathermal (E>3keV) number density and composition in the Saturnian magnetosphere, based on MIMI measurements after 3.5 years of Cassini in orbit.

N. Sergis (1), S. M. Krimigis (1,2), D. Hamilton (3) and D. G. Mitchell (2)

(1) Office of Space Research and Technology, Academy of Athens, Athens, Greece.

(2) The Johns Hopkins University Applied Physics Laboratory, Laurel, Maryland, USA.

(3) Department of Physics, University of Maryland, College Park, Maryland, USA.

nsergis@phys.uoa.gr / Fax: +30 210-6597602 / Phone: +30 210-6597639

The Cassini spacecraft has already completed 3.5 years in orbit around Saturn. Based on combined Charge-Energy-Mass Spectrometer (CHEMS) and Ion and Neutral Camera (INCA) measurements of the Magnetospheric Imaging Instrument (MIMI) suit, we have calculated the energetic (suprathermal) particle density (E $>$ 3 keV) for the dominant species of H^+ and O^+ ions, along the spacecraft's trajectory. Using all available data obtained during both the equatorial plane and high latitude orbits of Cassini, we present the suprtathermal particle distribution in the Saturnian magnetosphere along with the O^+/H^+ number density ratio, in several parameter spaces, investigating in particular the latitude and local time dependence, in the context of existing models. The results show that: (1) The energetic particle (E $>$ 3 keV) number density slowly drops from $\sim 5 \times 10^3$ m^{-3} to $\sim 10^3$ m^{-3} over the range $\sim$ 9 R_S to $\sim$ 15 R_S (2) The O^+/H^+ ratio is largest on the dayside equatorial plane ($O^+/H^+ \approx 2/1$). The results are also compared to the corresponding cold plasma density and composition.