



Comparison of electron populations in the Saturn and Earth magnetospheres from CAPS/ELS.

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In this presentation we will compare electron distributions observed in the approximate equatorial plane of the Earth and Saturn. During the Cassini Earth-swingby Cassini made a snapshot of observations of the Earth's magnetosphere from +10 to -80 R_e in the GSE- x direction. During this flyby Cassini measured the characteristic length scale of the bow shock foot and ramp to be of the order of an ion gyroradius and inertial length respectively (as expected). Magnetosheath and plasmashet distributions were observed to be well modeled as Maxwellian distributions. There was relatively slight demarcation between the outer magnetosphere and the corotating plasmasphere. Outer and inner radiation belts were clearly observed during both the inbound and outbound pass and found to be less intense than predicted by the AE-8 max radiation belt model. During Cassini-Saturn orbital insertion Cassini flew from +20 to -20 R_s in the SSE- x direction. First estimates suggest the solar wind magnetosonic Mach number was high, between 6 and 20, and instantaneous measurements (neglecting shock speed) find the shock scales to be less than one ion gyroradius. There was a marked difference between an outer magnetospheric region and a plasmasphere like region, with this boundary occurring far further from the planet in relative terms than is the case at Earth. Using electron energy distributions and pitch angle distributions observed in various regions of Saturn's equatorial magnetosphere we will discuss

trapped, beamed and bidirectional electrons in order to compare general features and electron processes within these two magnetospheres.