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Comparison of energetic electron fluxes at Earth and Saturn
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Energetic electron fluxes (18 keV-21 MeV) observed by the MIMI/LEMMS instrument on the Cassini mission during 2004-2008 are analyzed. We consider all 101 orbits and we select portions of the orbits that lie within 0.5 R of the magnetic equatorial plane,where R is Saturn's radius. We determine the average electron differential flux and integral flux at specified L-shells in the range $4.5 < L < 11$. Comparisons are made between the observed fluxes and the corresponding relativistic self-limiting values developed from Kennel-Petschek theory. These comparisons suggest that (1) at lower L-shells particle injection is relatively weak, (2) at intermediate L-shells, sufficiently strong particle injections generate whistler-mode waves to self-limit trapped fluxes,and (3) at larger L-shells, intense particle injections result in trapped particle fluxes well in excess of the Kennel-Petschek limit. Further,we compare the properties of energetic electron fluxes at Earth and Saturn.

キーワード: observed electron fluxes at Earth , Saturn, Kennel-Petschek limit
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