# Dynamics of the Trapped Electron Phase Space Density in Relation to the Wave Activity in the Inner Magnetosphere

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Recent spacecraft missions have demonstrated the complexity of the dynamics of the inner magnetosphere and its electron radiation belts. The phase-space density (PSD) of the energetic tail of the electron distribution has been locally reconstructed and is the basis of a time-dependent model in invariant-space coordinates (mu, K, L*). We discuss the response of the PSD peaks to interplanetary plasma and field variables and compare with the response of the ultra-low-frequency (ULF) wave power measured at geosynchronous orbit and remotely-sensed from ground magnetometer arrays. At L=4-8, the energetic electron PSD has significant similarity to the ULF wave activity and the electron transport is diffusive with $\tau$=2-3 days. Above the plasmapause, L=3-4, and in the inner belt (L<2) the electron transport becomes impulsive and is characterized by rapid acceleration events. For that region we will report on an initial comparison of the electron PSD model at low L* to high-frequency (upper-hybrid and whistler) wave activity.