E113-020 **Room: 201B** **Time: May 23 10:15-10:30**

Relativistic Turning Acceleration of Resonant Electrons by Coherent Whistler-Mode Waves in a Dipole Magnetic Field

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We report a very efficient process for accelerating high energy electrons by coherent whistler-mode waves in the Earth’s dipole magnetic field, which we have found in our recent test particle simulations. The efficient acceleration process takes place for weakly relativistic seed electrons of a few hundred keV. Under an assumption that the whistler-mode wave packets are excited near the equatorial plane of the inner magnetosphere and propagate away from the equator, the acceleration process becomes irreversible. With a sufficiently long whistler-mode wave packet of the order of one second, the energetic electrons are accelerated to a relativistic energy range of a few MeV through a single resonant trapping process. We call this particular acceleration process relativistic turning acceleration (RTA), which could be a viable mechanism for increasing relativistic electron fluxes in the outer radiation belt. Necessary conditions for RTA are a relatively large amplitude of whistler-mode waves, in the range of 50 pT to a few hundred pT, and an initial kinetic energy of trapped electrons in the energy range of a few hundred keV. The minimum energy of electrons accelerated by the RTA process, and the maximum energy attained by it are derived analytically, and verified by the test particle simulations.