E113-042 **Room: 304** **Time: May 27 15:00-15:15**

Relativistic turning acceleration of radiation belt electrons by whistler-mode chorus

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We perform test particle simulations assuming whistler-mode chorus wave packets that are generated at the geomagnetic equator propagate away from the equator in both poleward directions. While electrons in the energy range 10 - 100 keV are primarily responsible for the generation of chorus waves through pitch angle diffusion into the loss cone, it has been found that a fraction of the higher-energy electrons from a few hundred keV to a few MeV are effectively accelerated by chorus due to a special nonlinear trapping process called relativistic turning acceleration (RTA). This mechanism has been recently demonstrated for a coherent whistler-mode wave packet with a constant amplitude and constant frequency. In the present study we confirm that the RTA process takes place for a wave packet with variable frequency such as that occurring in a rising tone of chorus emissions. We study the efficiency of the RTA process for different particle energies. A Green's function method is used to describe the evolution of the particle energy distribution function. The RTA process due to chorus emissions creates a high-energy tail in the electron energy distribution function. The shape of the high-energy tail is determined by the distribution function of the seed electrons in the lower-energy range. RTA can accelerate electrons in a much shorter timescale than that estimated by quasi-linear diffusion theory, e.g., it typically takes tens of minutes to hours for $¥sim$ 100 keV seed electrons to be accelerated to energies of a few MeV by RTA.