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# Energetic electron dynamics caused by whistler-mode chorus emissions in the Earth's inner magnetosphere

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Energetic electron accelerations and precipitations in the Earth's inner magnetosphere and outer radiation belt are highly associated with wave-particle interactions between whistler-mode chorus emissions and electrons. Two nonlinear processes, which change the energy and pitch angle of electrons effectively, take place in whistler mode wave-particle interactions. One is the nonlinear scattering, which smaller the electron energy slightly. The other is the nonlinear trapping, which makes effective energy gain of the resonant electrons. We utilized the Green's function method to reproduce the wave-particle interactions in the inner magnetosphere and investigate the electron acceleration and precipitation interacting with both parallel and obliquely propagating chorus emissions. The formation processes and the loss processes of the outer radiation belt electron fluxes interacting with consecutive chorus emissions are traced by applying the convolution integrals for the Green's functions. In the acceleration parts, MeV electrons are generated promptly due to the combination of cyclotron resonance and Landau resonance of oblique chorus waves. We compare the precipitation phenomena between parallel waves and oblique waves, and the results show that oblique chorus emissions lead to more electron precipitation than that led by parallel chorus emissions. Furthermore, we found that the acceleration process is stronger than the loss process, indicating that the radiation belt becomes stronger under the wave-particle interactions between chorus emissions and electrons comprehensively.