

Sideband Waves Generated by Relativistic Untrapped Electrons Resonant With Whistler Mode Signals

Makoto Ikeda[1]

[1] Faculty of Humanities, Musashi Univ

Nonlinear Doppler-shifted cyclotron resonant electrons interacting with the whistler mode carrier signal are probable to be untrapped out of the phase potential well and to generate sideband waves by the relativistic way in the magnetosphere (Ikeda, 2005). According to Ikeda et al.(1988), Sonwalkar et al.(1997), Ikeda(2002), and Ikeda(2005), these electrons may have the energy perpendicular to the external magnetic field, $E_{\perp}=0.6\text{KeV}-14\text{KeV}$. So far, the electrons included in this energy range have been dealt with non-relativistic mechanics of whistler-mode resonance interaction. In this meeting, by using relativistic motion equations for untrapped electrons, the author derived the frequency separation of sideband signals and supposed that this separation meant the frequency gaps formed by the scattering of the relativistic electrons. Furthermore, the author would like to show the comparison between results of relativistic cases and those of non-relativistic cases, and he wants to emphasize the importance of relativistic characteristics.