R006-39
Zoom meeting B ：11/2 PM1 (13:45-15:30)
15:00〜15:15

Effect of whistler waves on electron bounce motion in the Earth's magnetotail

#Fumiko Otsuka[1)],Kaiti Wang[2)],KIROLOSSE MINA GIRGIS[3)],Tohru Hada[4)]
([1]Kyushu Univ.,[2]Tamkang Univ.,[3]Kyushu Univ.,[4]Kyushu Univ.

Whistler waves play an important role in the scattering of energetic electrons in the Earth's magnetosphere. Pitch-angle scattering of trapped electrons caused by the wave-particle interaction via such waves violates the invariant of periodic bounce motion of the electrons in the dipolar magnetic field.We study the effects of whistler waves on the electron bounce motion in the Earth's magnetotail by performing test particle simulations. We use three models for the background magnetic field; a uniform field, a pure dipolar field, and a stretched dipole-like field. Oblique whistler waves, localized around the magnetic equator, are given as a superposition of sinusoidal waves obeying a cold plasma dispersion relation. We solve a relativistic equation of motion of electrons in the given electromagnetic fields. Electron bounce periods are evaluated as functions of the electron energy and the initial pitch-angle and are compared with the adiabatic theory. We demonstrate that the electrons sometimes switch their guiding field lines due to the wave scattering, and their mirror points and bounce periods vary in time. We will discuss these results referring to a THEMIS observation of the dipolarization event detected at ˜10 RE tailside near the magnetic equator.