

Electric field disturbances observed by THEMIS mission at dipolarization sites in the magnetotail

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The electric fields measured at dipolarization sites when geomagnetic AL index decreases in the inner plasma sheet from 2008 to 2011 by the Electric Field Instrument (EFI) of THEMIS mission were analyzed and some cases show that the electric fields are disturbed with wave-like signatures. Preliminary results show that the frequencies of these disturbances are found to be between proton gyrofrequency ($f_{cH}+$) and half of the electron gyrofrequency (f_{ce}), so possibly to be whistler-mode and lower-hybrid waves.

In this study, the wave properties of these fields will be investigated in detail. Since electric fields have been suggested to be able to accelerate electrons and can be a significant non-adiabatic acceleration mechanism for particles during dipolarization, acceleration of electrons and scattering in their pitch angles by these observed field disturbances will also be evaluated. This will be beneficial to our understanding on the role of the electric field disturbances play on electrons during dipolarization.

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