

Study of the waves associated with reconnection on dayside magnetopause

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Magnetic reconnection can convert magnetic energy to kinetic energy, but the process remains considerable controversy. Most previous investigations have concentrated on plasma and magnetic field properties of these events. However the wave signature are also interesting and these not only serve as additional diagnostic tool with respect to these events but also provide important clue to the details of the reconnection process itself.

A famous CME event occurred and hit the earth's magnetosphere on Jan. 10, 1997 while GEOTAIL just skimmed the dayside magnetopause. Combined with other observations, we have comprehensively studied the plasma waves associated with the reconnection event by Plasma Wave Instruments (PWI) onboard the GEOTAIL.

The results clearly showed that the wave activity coincides exactly with the magnetic reconnection event. During the process burst of broadband electrostatic noise (BEN) is generated, and there is rich phenomena of plasma waves, including quick change of the frequency and modulation of amplitude. The importance of these

results for the understanding of reconnection processes and wave-particle interaction will be discussed.