Characteristics of Pc 5 ULF Waves in the Outer Magnetosphere Observed by GEOTAIL Satellite

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Characteristics of Pc 5 ULF waves observed by GEOTAIL in the dayside outer magnetosphere are analyzed based on the data of the magnetic and electric fields, and low energy plasma data. Followings are typical characteristics;

1.Transverse Pc 5 waves are dominant in the dawn side outer magnetosphere, while in the dusk side compressional waves are dominant.

2.Electric field perturbations of large amplitude transverse Pc 5 waves made frequency modulation of low energy plasma with double that of Pc 5 oscillations.

4.Poynting fluxes of these Pc 5 waves are found to be 10(-8) – 10(-6) W/m2.

5.Pc 5 waves should play an important role for energetics in the magnetosphere and the ionosphere.

Characteristics of Pc 5 ULF waves observed by GEOTAIL in the dayside outer magnetosphere are analyzed based on the data of the simultaneously observed magnetic and electric fields, and low energy plasma data. Followings are typical characteristics;

1. Because of the satellite orbits, which are near the magnetic equator, Pc 5 ULF waves are dominantly observed in the data of the electric field.
2. Transverse Pc 5 waves are dominant in the dawn side outer magnetosphere, while in the dusk side outer magnetosphere compressional waves are dominant.
3. Large amplitude transverse Pc 5 waves are observed in the dawn side during the magnetic quiet condition. They accompanied low energy plasma oscillations with frequency double to that of Pc 5 oscillations.
4. Poynting fluxes of these Pc 5 waves are examined and found to be 10(-8) – 10(-6) W/m2.
5. By taking into account of the continuous activation of Pc 5 waves in the outer magnetosphere they should play an important role for energetics in the magnetosphere and the ionosphere.