

Wave characteristics of Pc 3 pulsations observed by Geotail in the dayside outer magnetosphere

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Wave characteristics and Poynting vectors of Pc 3 pulsations observed in the dayside outer magnetosphere are examined with the magnetic and electric field data observed by the GEOTAIL satellite. Both transverse and compressional oscillations are clearly identified in the upstream region, magnetosheath region and the outer magnetosphere. Spectral power shows greatest in the magnetosheath, while least in the outer magnetosphere, i.e., one or two orders less than that of the magnetosheath Pc 3. Poynting energy can be calculated for Pc 3 waves observed in the outer magnetosphere, which is about 10^{-8} - 10^{-9} W/m². The propagation also shows in both directions across and along the magnetic field-line with a same order. From these results we can estimate the Pc 3 wave energy flowing into the inner magnetosphere from the outer magnetosphere during an hour as 10^9 - 10^{10} J, which is two or three orders less than the Pc 5 wave energy. However, by taking into account of the continuous activation of Pc 3 pulsations in the outer magnetosphere, Pc 3 waves should play an important role for energetics in the magnetosphere.