

PEM027-P02

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## Statistical analysis of LH plasma waves observed by Geotail spacecraft

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In this study, we make analysis on generation conditions of LH plasma waves observed by Electric Field Detector (EFD) onboard Geotail spacecraft. We detected LH plasma waves automatically from EFD data, and made an occurrence frequency distribution of LH plasma waves.

LH plasma waves are observed in Lobe region and PSBL region in the magnetosphere. We studied several plasma parameters at the time when LH waves were observed. We found that LH waves were observed with the large perpendicular velocity of ion and the earthward ion flow. In addition, the LH plasma waves observed with the earthward ion flow have low frequencies, and the strengths of those LH plasma waves are relatively large. Figure 1 shows the spatial distribution of the point where LH plasma waves were observed by Geotail spacecraft. Red, blue and light blue points show LH plasma waves observed in Lobe, PSBL and other regions, respectively. These results suggest that strong LH plasma waves are observed in the boundary region where ion flow usually exist, such as Lobe region close to PSBL. In addition, LH plasma waves are observed when ion velocity perpendicular to the ambient magnetic field is enhanced and earthward ion flows are observed. We will farther investigate the occurrence conditions of LH plasma waves to clarify the generation mechanism of these waves and their effects on local plasma environment in the magnetosphere.

Keywords: Lower Hybrid plasma wave, magnetosphere, statistical analysis, ion flow, wave-particle interaction