

# Statistical study of the plasmopause shape by using longitudinally separated ground magnetometer networks

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The dual-station H-component power-ratio method [Baransky et al., 1985] which is one of the useful methods for identifying the field-line eigenfrequency is very useful for detecting the plasmopause location from the ground data. The H-component power ratio, obtained by this method as a function of frequency, can show two patterns: One is an increase-then-decrease pattern (as a function of frequency) which is observed outside the plasmopause boundary layer, and we name it Type1. The other is a decrease-then-increase pattern which is observed inside the plasmopause boundary layer, and we name it Type2. By using this, we can identify the plasmopause location from ground magnetometer data.

The difference between the two patterns is caused by the rapid decrease of the plasma density in the plasmopause boundary layer: Inside the plasmopause boundary layer, the decreasing rate of the plasma density is large, thus the Alfvén velocity increases with increasing L. Therefore, the field-line eigenfrequency increases with increasing L. On the other hand in the other regions, the decreasing rate of the density is small while the magnetic field line strength largely decreases with increasing L, thus the Alfvén velocity decreases with increasing L. Therefore, the field-line eigenfrequency decreases with increasing L.

We have been applying the dual-station H-component power-ratio method to two station pairs belonging to two magnetometer networks whose local times differ. One is the Circum-pan Pacific Magnetometer Network (CPMN, located along the 210 degrees magnetic longitude) and the other is the Geophysical Institute Magnetometer Array (GIMA, located along 265 degrees magnetic longitude). In the previous SGEPS meeting, we presented a case study of this analysis in which a Type2 event was observed at both CPMN and GIMA during the same time. In this paper, we will apply the dual-station H-component power-ratio method to CPMN and GIMA on a statistical basis, in an attempt to monitor the local-time dependence of the plasmopause location from the ground, and the result will be presented at the meeting.