

Pi2 pulsations in a small plasmasphere

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We study a Pi2 pulsation occurred at 1520 UT on August 29, 2000. This Pi2 event was observed at ground stations from high (geomagnetic latitude = 65°) to low latitudes (17°) near midnight with an identical waveform and oscillated with a frequency of 11 mHz. During the event the global plasmaspheric structure was obtained from the IMAGE satellite and the location of the plasmopause was clearly identified. The plasmasphere was asymmetric and the plasmopause was located at L = 3 (2) near the dawnside (duskside). Using a magnetospheric mass density model constructed from the IMAGE satellite data [Denton et al., 2005], we examine whether the Pi2 pulsation observed inside the plasmopause can be explained by a plasmaspheric cavity mode. We find that the 11-mHz oscillation is too low to be established as a cavity mode in the plasmasphere. Thus, the plasmaspheric cavity mode is not an appropriate model for the Pi2 pulsation at mid and low latitudes. The Pi2 pulsation was observed at high latitude outside the plasmopause with the nearly identical frequency at low latitude. We discuss what determines its period and waveform.