

Pi2 pulsations observed by the Arase satellite inside and outside the plasmopause

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The spatial structure of Pi2 pulsation relative to the plasmasphere has been studied using the magnetic and electric field observed from the equatorial orbiting satellite in the inner magnetosphere by Takahashi et al (2003; 1995). They showed that the nightside Pi2 pulsations in the inner magnetosphere, which have high coherence with those at low-latitude ground station, are dominated by the poloidal component (the radial and compressional components for the magnetic field and azimuthal component for the electric field). The amplitudes of the compressional magnetic field has maximum and azimuthal electric field and the compressional magnetic field have maximum and minimum in the vicinity of the plasmopause, respectively. The phase of the azimuthal electric field relative to low-latitude Pi2 pulsations on ground is 90 degrees in the plasmasphere. Such radial profile of the amplitude and phase of Pi2 pulsations can be explained by a plasmaspheric cavity mode resonance. However, the latitudinal structure of Pi2 pulsations in the electric field has not been examined. We investigate the latitudinal characteristics of off-equatorial Pi2 pulsations on the nightside and their relation to the plasmopause using the magnetic field measured by the fluxgate magnetometer measured by the Magnetic Field Experiment (MGF), the electric field measured by the Electric field Detector (EFD), and electron density derived from the spectra measured by the High Frequency Analyzer (HFA) from the Arase satellite.