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PEM031-P18

Room:Convention Hall

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## Plasma mass density profile of the inner magnetosphere estimated from the frequency of standing Alfvén waves

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The study of plasma density profile in the inner magnetosphere has been based on electron and  $H^+$  density, and the contribution of heavy ions was mostly neglected. Observations by the retarding ion mass spectrometer (RIMS) onboard Dynamic Explorer (DE-1) in 1981-1982 showed that there is heavy ion enhancement near the plasmapause identified by electron or  $H^+$ . In recent years, these cold heavy ions have attracted attention of researchers as the cause of the ring current ion composition change during magnetic storms. Unfortunately, however, there are no direct observations of the ion composition profile of the plasmasphere, since the DE-1 observations in 1980s. In this study, we intend to estimate the heavy ion composition profile in an indirect method. We determined the plasma mass density profile from the fundamental frequency of the harmonic of toroidal standing Alfvén waves, using magnetic field data obtained by the magnetometer on the TSUBASA satellite (MDS-1, Mission Demonstration Test Satellite-1) which had the geo-stationary transfer orbit. We obtained the plasma mass density profile over  $L=3-6$  from around 40 orbital passes on the noon side to the dusk side. We will show statistical results and discuss the existence of the cold heavy ions.