

# Global Structure of 2-D Plasma Sheet Profiles for Various IMF Conditions: Geotail Observations

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The near-earth magnetotail is an important region in magnetospheric dynamics. However, there have been few observational studies on the global structure of plasma density, temperature and magnetic fields in the magnetotail. In this study, we have statistically investigated the equatorial distributions of ions and magnetic fields from GEOTAIL spacecraft during 7 year period of 1995-2001. We first present the Alfvén speed distribution by adopting the averaged magnetic field and plasma density. We also present the distribution of plasma density, temperature and magnetic fields for different IMF conditions in the near-Earth plasma sheet region ( $|X_{GSM}| = 0-30$  RE,  $|Y_{GSM}| < 20$  RE). When the IMF is northward, (1) the plasma sheet becomes relatively cold and dense, (2) temperatures decrease, but densities increase near the dawn and dusk flanks of the plasma sheet, and (3) the dawn-dusk density (temperature) asymmetry with higher density (temperature) on the dawn (dusk) side is seen in the near-Earth plasma sheet. When the IMF is southward, the density asymmetry becomes weak while the temperature asymmetry remains significant. In addition, we also investigate the effects of Kp index in the global structures. Our result suggests that the temperature is found to be highly correlated with the Kp index variations.