



Experimental Evidence for the Relation between the Geomagnetic Tail Current

P. Israelevich and A. Ershkovich

Experimental Evidence for the Relation between the Geomagnetic Tail Current Splitting and Ion Pressure Non-gyrotropicity

We investigated the relationship between the geotail current sheet structure and the anisotropy of the ion pressure in the plasma sheet using *Cluster* data. Electric current density distribution in the geomagnetic tail is shown not to depend on the ratio between the parallel and perpendicular ion pressure. On the contrary, the tail current sheet bifurcation is controlled by non-gyrotropicity of plasma pressure. Double-peaked current density distribution is observed when the ion pressure perpendicular to the magnetic field exhibits anisotropy. The current sheet splitting is more prominent, and the electric current density is stronger for larger ratio $(T_{\perp max} - T_{\perp min})/(T_{\perp max} + T_{\perp min})$. Generally, double-peaked current sheets are thinner than single-peaked sheets, and the current sheet thinning is accompanied by the perpendicular temperature anisotropy.