

The Hall current structure in the magnetotail

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The spacecraft Geotail observed plasma flow reversals in the magnetotail. In the tail lobe-plasma sheet boundary, Geotail observes accelerated electrons flowing into the diffusion region. These electrons can carry currents flowing into the diffusion region. However, it is difficult to identify Hall current electrons near the diffusion region.

The spacecraft Geotail observed plasma flow reversal events in the magnetotail in association with substorm onsets. In the tail lobe-plasma sheet boundary, Geotail observes accelerated electrons flowing into the diffusion region. These electrons can carry currents flowing out of the diffusion region. The observed deflection in the dawn-dusk magnetic field component is consistent with the Hall current system. When tailward flows are observed, the B_y variations are negative in the northern hemisphere, whereas they are positive in the southern hemisphere. However, it is difficult to identify the Hall current electrons near the diffusion region.