

## Enhancements of Lobe Ion Density and Velocity Associated With Plasmoids

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Recently we have shown that intermittent enhancements in density and velocity of lobe ions can be detected by the GEOTAIL satellite after the passage of a plasmoid. These enhancements are associated with the passage of magnetic neutral lines following the plasmoids. Here, we concentrate on the event of 00-24 UT on October 4, 1994 when the geomagnetic disturbances were relatively isolated from one another. The timing of the onsets of the geomagnetic disturbances, the passages of the plasmoids and the lobe ion enhancements could then be easily identified.

In recent studies, we have shown that (1) intermittent enhancements in density and velocity of lobe ions are sometimes detected by the GEOTAIL satellite after the passage of a plasmoid, and (2) these enhancements are associated with the passage of a magnetic neutral line ( X-line) following the plasmoid. In this paper, we concentrate on the event of 0000-2400 UT on October 4, 1994 during which the geomagnetic disturbances were relatively isolated from one another. In these cases, the timing of the onsets of the geomagnetic disturbances, the passages of the plasmoids and the lobe ion enhancements can be easily identified. The delays between the onsets of the geomagnetic disturbances and the plasmoid passages, and between those onsets and the ion enhancements are examined in detail and found to be in the ranges of 10-40 minutes and 20-60 minutes respectively. The plasmoid velocities and neutral line velocities are estimated to lie in the ranges 300-1400 km/s and 200-700 km/s respectively.