

磁気圏尾部における non-active flow reversal イベント Non-active flow reversals in magnetotail

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Geotail observation over 20 years in magnetotail provides us with about 200 rapid flow reversal events where tailward flow (< -500 km/s) turns to earthward flow ($> +300$ km/s) within 10 minutes. Nagai et al. (2013) proposed that $V_{ey} < -1000$ km/s is an important criterion to select active X-lines. As a result, we get 30 active X-line crossing events. Active X-line events show electron acceleration during flow reversals and existence of ion-electron decoupling region. These features are consistent with the collisionless reconnection model demonstrated by recent full kinetic numerical simulations. In contrast, other 16 flow reversal events do not present any of them. No visible ion-electron decoupling is found in these non-Active flow reversal events. In this presentation, we will discuss physical meaning of the difference between active X-line and non-active flow reversal events.

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