

Mass and energy transports in the near-Earth magnetotail during substorms

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Selecting 319 substorm events with the Pi 2 pulsation, we have statistically investigated temporal variations in mass and energy transports in the near-Earth magnetotail with GEOTAIL data.

The mass and Poynting fluxes are provided from the lobe to the plasma sheet before onset. The Poynting flux increases significantly after onset.

In the plasma sheet, considerable large tailward mass and thermal energy fluxes with the large duskward component appear around $X=-28$ Re after onset.

These results provide us with a significant clue to understanding of substorm process and mechanism.