

Study of structure and instability of current sheet by observations of Cluster and TC1 and computer simulations

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The tail current sheet and its dynamics are one of the most important elements in magnetospheric physics. Multipoint observation of Cluster with spatial scale varying from 250 km to 4000 km together with TC1 enabled us to resolve current structures and relevant particle behavior near the reconnection diffusion region. In this paper, we present several events near X-line region with flow reverses in the magnetotail, and study the structure, dimension and dynamics of current sheet. The structure, scale and evolution of magnetic islands, rope or flux near the X-line region has been investigated and compared with computer simulations.