

Three-Dimensional Dynamics of Magnetic Reconnection in Two-Dimensional Equilibria

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Understanding the dynamics of reconnection jet in the near-Earth magnetotail requires the effects of the B_z component to be included appropriately. In this study, we have conducted three-dimensional hybrid simulations of magnetic reconnection in two-dimensional magnetotail-like equilibria.

The earthward jet emanated from an extended X-line is observed to get filamentated into narrow channels whose dawn-dusk scale size are less than a few Earth radii.

The magnetic field configuration becomes much more complicated than in Harris equilibrium cases and the generated field-aligned current is much more intensified.

We will try to relate these results with magnetospheric phenomena during substorms.

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