



## **On the detection of a vortex chain in the Earth's magnetotail**

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Plasma vortices are often detected by spacecraft in the magnetospheric environment, for instance in the magnetosheath and in the magnetotail. Large scale vortices may correspond to the injection scale of turbulence, so that understanding their origin is important for understanding the energy transfer processes in the geospace environment. In a recent work, the THEMIS mission has detected vortices in the magnetotail in association with the strong velocity shear of a substorm plasma flow (Keiling et al., *J. Geophys. Res.*, 114, A00C22 (2009), doi:10.1029/2009JA014114), which have conjugate vortices in the ionosphere. By analyzing the THEMIS data for that event, we find that several vortices in the magnetotail can be detected together with the main one, and that the vortices indeed constitute a vortex chain. The analysis is carried out by analyzing both the velocity and the magnetic field measurements for spacecraft C and D, and by obtaining the corresponding hodograms. It is found that both monopolar and bipolar vortices may be present in the magnetotail. The comparison of observations with numerical simulations of vortex formation in sheared flows is also discussed.

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