Geophysical Research Abstracts, Vol. 7, 03468, 2005 SRef-ID: 1607-7962/gra/EGU05-A-03468 © European Geosciences Union 2005



Cross-tail current sheet configuration

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With Cluster 2001–2003 observations at 20 Re downtail we determine the cross-tail current sheet configuration via mapping of the neutral sheet positions and direct measurements of the sheet inclination. The warping effect tilts both flanks of the sheet up to 40 degrees in the YZ GSM plane, while the gradual hinging effect tilts the sheet up to 10-20 degrees roughly in the XZ plane. These findings are in agreement with the recent neutral sheet model of Tsyganenko and Fairfield (2004). Non-uniform response of the neutral sheet By to IMF was also revealed. Typical IMF By penetration efficiency was 40-60%. However, efficiency for positive IMF By was below 20% at both flanks. Therefore, at the flanks of the neutral sheet the normal magnetic field component (along the normal to the warped sheet) is generally larger, than the shear component (along the current).

This investigation was partially supported by the INTAS grant 03-51-3738. A.A.P. would like to acknowledge the Russian-Austrian academic exchange program and hospitality of IWF, Graz.