



## **A survey of high-latitude flux transfer events observed by Cluster: northward IMF**

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During Cluster's dayside magnetopause crossing season (November - June) the four spacecraft cross the magnetopause at higher latitudes near local noon, and further along the flanks, than previous missions. This provides high-latitude and flank observations of Flux Transfer Events (FTEs), a signature of transient magnetopause reconnection. We present the results of a statistical study of FTEs observed by Cluster in the 2002/3 dayside season. Some statistical results are consistent with the results of earlier surveys at lower latitudes. For example, the majority of FTEs occur under southward IMF; those observed under southward IMF in the northern hemisphere tend to have a standard polarity (positive-negative) bipolar signature in the component of the magnetic field normal to the magnetopause, whilst those in the southern hemisphere generally exhibit a reverse signature (negative-positive). However, a significant number of FTEs were observed under strongly northward IMF. These events are mostly standard polarity irrespective of the hemisphere in which they are observed. Furthermore, FTEs occurring under northward and dawnward IMF were predominantly observed on the dusk flank, and *vice versa*. These two observations are consistent with the northward IMF FTEs being generated by lobe reconnection. When magnetosheath and magnetospheric magnetic field lines reconnect, two FTEs are generated, which propagate away from each other due to magnetic tension. Cluster crosses the northern hemisphere magnetopause at lower latitudes than in the southern hemisphere. This orbital bias implies that Cluster generally passes equatorward of any northern hemisphere reconnection site, but tailward of any southern hemisphere site. Hence, the southernmost FTE of the pair is more likely to be observed in whichever hemisphere Cluster is located. This orbital effect causes the bias towards standard polarity in both hemispheres.