



## **Magnetic reconnection at the dayside magnetopause observed by Double Star TC-1: A preliminary study**

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### **Abstract**

Magnetic reconnection at the magnetopause is believed to be the main process by which the solar wind transfers energy and particles into the magnetosphere. Previous observations have considerably increased our understanding of this key process in the solar wind–magnetosphere coupling. Nevertheless, up to now some fundamental questions remain unsolved. For instance, it is not yet known where reconnection first occurs during periods of a non-zero interplanetary magnetic field (IMF). By; the relative importance of anti-parallel reconnection vs. component reconnection is still unclear; whether reconnection can appear at the dayside low-latitude magnetopause for northward IMF  $B_z$  is also a matter of ongoing discussions.

The apogee of Double Star TC-1 and Cluster constellation are both in the solar wind during spring and late winter. Conjunctions between the Double Star and Cluster can be found at the magnetopause. This provides excellent opportunities to investigate reconnection at the low latitudes by Double Star TC-1 and at high latitudes by Cluster. From February to March, 2004 TC-1 observed a number of magnetopause reconnection signatures. This paper presents analyses of a few presentative TC-1 observations together with events by Cluster. The preliminary study of these events indicates

that component reconnection preferably occurs in the equatorial region of the dayside magnetopause. There is direct evidence that reconnection may appear on the dayside equatorward of the cusp for northward IMF. Conjunction between the Double Star and Cluster measurements is also investigated and discussed.