

Double Star TC-1 Observation of Magnetic Reconnection at the Dayside Magnetopause : A Preliminary Study

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In spring 2004 Double Star TC-1 measured a number of reconnection signatures at the dayside low-latitude magnetopause (MP) when there was notable By component in the magnetosheath. In a certain number of events it can be shown that reconnection was operating nearby TC-1 in the subsolar MP region. In this paper we describe three representative events: (a) Event on 21 March 2004 in which the reconnection site can be remotely determined, the spacecraft was passing by the X-line; (b) event on 12 March in which TC-1 observed the magnetospheric part of the quadrupolar field, together with a consistent flow reversal; (c) event on 26 March which occurred for northward of IMF, TC-1 observed a reversal of V_y across the equatorial MP. In these events the shear angles across the MP were considerably smaller than 180 degree; a noticeable guide field was present. These observations are consistent with near equatorial component merging, suggesting that component reconnection preferably occurs at the dayside low-latitude magnetopause (MP). There is evidence that when a pronounced magnetic shear across the MP exists in the By component, reconnection may operate at the dayside low-latitude magnetopause for northward IMF Bz.