

论文

近地磁尾重联中哨声波和Hall磁场的Cluster观测

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摘要 在2001~2003年Cluster飞船通过近地磁尾期间,共探测到14次重联事件,在这些事件中同时还观测到等离子体波活动.本文把14次事件分为三大类,其中:第I类包含了8次事件,它们是在等离子体片内先于重联事件观测到波活动,并且还同时观测到Hall磁场.经过分析判断,这类事件中观测到的波是右旋偏振的哨声波.第II类包含了2次事件,这类事件也观测到了Hall磁场和右旋偏振的哨声波.第III类也包含了2次事件,这类事件只是普通的重联事件,没有观测到Hall磁场,但是波活动明显先于重联事件.在我们观测的14次事件中,比较强烈的哨声波和Hall 磁场是一一对应的,因此哨声波可能主要是在Hall磁场的四极结构区激发的.

关键词 [磁尾](#) [无碰撞重联](#) [哨声波](#) [Cluster飞船](#) [Hall磁场](#)

分类号

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**Whistle and Hall magnetic field associated with near Earth magnetotail reconnection observed by Cluster**

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**Abstract** During 2001~2003, the Cluster spacecraft passed through the near Earth magnetotail, and observed 14 magnetotail reconnection events. Simultaneously, Cluster observed electromagnetic wave associated with reconnection events. There are three kinds of reconnection events in these 14 events. There are 8 events in the first kind of reconnection event, in this kind of reconnection events wave activity were observed prior to the reconnection event and simultaneously Hall magnetic field was observed. The wave activity included right hand polarized Whistler. The second kind of reconnection events had two events. Whistler waves and Hall magnetic field were observed in this kind of events, but the wave activity was not prior to reconnection events. The third kind of events had two events. The Whistler waves and Hall magnetic were not observed in this kind of reconnection event. In these 14 events, the strong Whistler waves corresponded to Hall magnetic field. Whistler waves may mainly be excited in Hall magnetic field regions.

**Key words** [Magnetotail](#); [Collisionless reconnection](#); [Whistler wave](#); [Cluster spacecraft](#); [Hall magnetic field](#)

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