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Statistical study of reconnection events

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Plasmasheet crossings of the Cluster satellites in the magnetotail during the years 2001-2004 have been searched for reconnection events. Thirteen events have been selected for further analysis using magnetic field data (FGM), electric field data (EFW), ion data (CIS) and electron data (PEACE). During this time interval the internal separation of the satellites have changed several times, giving the opportunity to study the structure of the reconnection events at different scales.

While previous studies have mainly concentrated on single events, this study focuses on a few selected parameters of thirteen reconnection events. We find that in all of the events the spacecraft observed a moving reconnection diffusion region, large electric fields and branches of the Hall magnetic field. The study also includes a statistic of the solar wind conditions, position in local time and ExB-flows.