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CLUSTER observations of waves in and around a possible reconnection diffusion region in the Earth's magnetotail current sheet.

P. Petkaki (1), A. Walsh (1), M. Freeman (1), A. Buckley (2), C. Owen (3), E. Lucek (4), R. Horne (1), N. Cornilleau - Wehrlin (5)

(1) British Antarctic Survey, High Cross, Madingley Road, Cambridge, CB3 0ET, UK, (2) Space Science Centre, School of Science and Technology, The University of Sussex, Falmer, Brighton, E. Sussex, BN1 9QT, UK, (3) Mullard Space Science Laboratory, Holmbury St. Mary, Dorking, Surrey RH5 6NT, UK, (4) SPAT, Blackett Laboratory, Imperial College, London, SW7 2BW, UK., (5) CETP/UVSQ, 10/12 Ave. De l'Europe, Velizy, France. ((ppe@bas.ac.uk; mpf@bas.ac.uk; rh@bas.ac.uk; lucek@imperial.ac.uk; A.M.Buckley@sussex.ac.uk; cjo@mssl.ucl.ac.uk)

We present an analysis of electric and magnetic waves from 8 to 4000 Hz measured by STAFF instruments on the Cluster spacecraft during several current sheet crossings on 11/10/2001. Plasma flows of order of the local Alfvén speed reversed from tailward to earthward, suggesting that a possible reconnection site moved over spacecraft. Strong broadband electric and magnetic wave activity was seen during the interval with little evidence of discrete linear wave modes. We ordered the observed wave spectrum by the position within the current using the magnitude of the magnetic field. We found that the electric and magnetic wave power decreased considerably at all frequencies when the magnetic field strength approached zero, indicating that electrostatic and electromagnetic waves might be efficiently suppressed within the current sheet. The implications of these results for reconnection from wave-particle interactions are discussed.