

Abstract Submitted
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Cluster observations of electron heating during magnetospheric reconnection¹ HARSHA GURRAM, JAN EGEDAL, UW-Madison — In-situ spacecraft observations have shown that strong kinetic effects are present during the magnetic reconnection in the Earth's magnetosphere. This study investigates the electron distribution functions and electron heating recorded by the Cluster Mission, during the reconnection event on August 21, 2002. For this event the electrons see an increase in their bulk energy by about a factor of 100 from the inflow to the exhaust, rendering this data set particularly interesting. The observed electron distribution functions delineate inflow and exhaust regions by comparing it with distinct morphology of distributions i.e. inflow electrons are colder and with a temperature anisotropy [1]. In addition, beam like features are observed in the distributions which are in good agreement with kinetic simulation results. The observations are consistent with a new model for electron energization in reconnection exhausts [2].

[1] L. J. Chen, et al., J Geophys. Res., 113, (2008)

[2] J.Egedal, et al., Phys. Plasmas, in press (2015).

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