



Electron energization near the electron diffusion region of high beta asymmetric reconnection

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We present observations of electron energization near the electron diffusion region (EDR) of magnetic reconnection in a high beta plasma. The reconnection is asymmetric with a moderate guide field. Reconnection signatures such as Hall fields, electron jets, scale of the current sheet (about 0.5 ion inertial length), and a lack of an ion jet indicate that the Magnetospheric Multiscale spacecraft are crossing a reconnecting current sheet close to the EDR. Parallel electron energization are observed on both edges of the current sheet while perpendicular energization is observed in the center of current sheet. The regions of parallel energization are correlated with the presence of parallel propagating electrostatic waves that are most probably generated by the accelerated electrons. We show that the electron energization can be explained by trapping and acceleration due to an electrostatic potential difference, similar to previous studies on low beta plasma. We conclude that the parallel electron energization mechanisms for asymmetric reconnection are the same for low and high beta plasma.