



Electron acceleration in the reconnection outflow region using MMS data

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We analyze in details Magnetospheric MultiScale observations from a single reconnection outflow region in magnetotail. We estimate the power of three fundamental electron acceleration mechanisms: Fermi acceleration, betatron acceleration, and acceleration due to parallel electric fields. The dominant acceleration mechanism is Fermi acceleration with a peak value of 210 pW m^{-3} . Betatron acceleration has a peak value of 72 pW m^{-3} , but on average it is close to zero and slightly negative. The acceleration due to parallel electric field is significantly smaller than Betatron and Fermi, but the large error in the parallel electric field measurement does not allow any further conclusions. There is a strong variation in the acceleration power of the order of seconds. The curvature during the most intense Fermi acceleration is comparable to electron gyroradius, consistent with efficient electron scattering.