



The electron diffusion region during magnetopause reconnection observed by MMS

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Observations of the electron diffusion region (EDR) during magnetopause reconnection will be reported based on measurements from the Magnetospheric Multiscale (MMS) mission. The unprecedented high-cadence three-dimensional measurements from the Fast Plasma Investigation and the FIELDS suite onboard the four MMS spacecraft captured plasma flows, fields, and electron distribution functions in a couple of EDR events. The MMS measurements will be examined and compared with predictions by particle-in-cell (PIC) simulations. Implications on key reconnection open questions such as collisionless dissipation and heating will be explored. In particular, whether cyclotron-turning of accelerated electrons towards downstream limits the current, and enables reconnection to occur in a collisionless plasma will be addressed for the first time with spacecraft measurements.