



Magnetic Curvature Identification of the Reconnection Line on the Earth's Magnetopause

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Magnetic reconnection controls the transfer of momentum from the solar wind to the Earth's magnetosphere by changing the connectivity of the magnetic field so it traverses the magnetopause current layer. The MMS mission has precise magnetic measurements with four closely spaced measurements that enable the radius of curvature of the magnetic field to be measured. Well to either side of this boundary, the magnetic field shape conforms to the curvature of the boundary, but when the magnetic fields are in quite different directions on either side of the boundary, neutral lines can form along the boundary and interconnection occurs. These regions of connection are clearly lines on the magnetopause and not neutral points. This can be shown by examining the radius of curvature during successive back and forth crossings of the magnetopause, which reveals the same structure, evolving as the EDR moves up or down perpendicular to the neutral line. Interestingly, the electron diffusion region is located at the point in which the field parallel to the magnetic field on the magnetospheric side of the boundary goes to zero. In this talk, we present several clear examples of this behavior on crossings originally identified by their electron crescent distributions.