

Analysis of multiple current layers in the magnetopause region with Cluster

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The current system in the magnetopause (MP) region often presents itself as a multiple layer structure. We have investigated two such cases seen by the Cluster satellites during dayside out-bound traversals: one with a pronounced overshoot in the magnetic signature located on the magnetospheric side, and the other having a well-defined two-steps boundary layer. By timing analysis and making use of the multipoint character of the mission one can determine the MP orientation and velocity along the normal as well as the thickness of each individual layer. For both cases the normals obtained in this way are in good agreement with those provided by the single spacecraft minimum variance method, which adds confidence to our results. The nature of the finer, super-imposed magnetic fluctuations seen during the MP crossing in one of the cases is investigated in detail.