



Two types of tangential magnetopause current sheets: Cluster observations and theory

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Early magnetopause observations revealed that the magnetic field can rotate across tangential current sheets in the form of C- and S-shaped hodograms. We use the four-spacecraft magnetopause crossings by Cluster in order to study the structure of the C- and S-sheets. We show that both current sheets can be described by analytical equilibria. We employ a force-free current sheet equilibrium for description of the C-sheet and develop a new equilibrium to describe the S-sheet. We suggest that both equilibria be used for setting up initial conditions in the next generation of current sheet simulations.