

# MULTI-POINT MEASUREMENTS IN THE CUSP: IMPLICATIONS FOR MAGNETIC RECONNECTION

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There is substantial evidence that magnetosheath particles precipitating in the cusp cross the magnetopause along open (reconnected) magnetic field lines. Considering the low altitude cusp as the confluence of these reconnected field lines, it has long been realized that a spacecraft trajectory through the cusp or an image of the cusp footpoint provides a global snapshot of reconnection. These snapshots provide information on the steadiness of reconnection and the conditions under which reconnection occurs at the magnetopause. Recent observations from the IMAGE and Cluster spacecraft provide new and unique views of the cusp footpoint and the low altitude cusp. IMAGE provides the first global images of cusp proton precipitation. The monitoring of the cusp footpoint has demonstrated that reconnection is a quasi-steady process that does not stop even as the interplanetary magnetic field changes orientation. Also, these observations show that, at times, reconnection occurs between magnetosheath and magnetospheric field lines that are nearly anti-parallel. Multi-point measurements in the cusp from the Cluster spacecraft confirm that structures seen in cusp ion precipitation are related to spatial structures in the cusp and not to temporal variations in the reconnection rate at the magnetopause. This talk reviews the new IMAGE and Cluster results from the cusp.