

Abstract Submitted
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Detection of gyro-scale current layers using single spacecraft parameters SHANSHAN RODRIGUEZ, JACK SCUDDER, University of Iowa — A single spacecraft technique using plasma, electric and magnetic field data, has been successfully performed on the detection of current layers throughout the magnetosphere. Ions have been demonstrated demagnetized at the bowshock and Chapman-Ferraro layers while electrons remain magnetized at these ion-gyroscale current layers. At the electron-gyroscale magnetic reconnection layers, this technique explicitly shows the demagnetization signatures of the electron diffusion regions (EDRs) by demonstrating a previously published reconnection event on 20010401, as well as providing a newly discovered event during a 3-year polar data search. These in-situ observations of reconnection events also illustrate that electron agyrotropy, Mach number and anisotropy passing certain thresholds as required properties of EDR implied by the 2D PIC simulation.

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