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Magnetic Reconnection at the Dayside Magnetopause Observed during Continuous IMF Rotation

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Magnetic reconnection at the Earth's magnetopause is discussed and has been observed at various times and places as either anti-parallel and/or component reconnection. A reconnection location prediction model known as the Maximum Magnetic Shear Model combines these two scenarios, creating long reconnection lines crossing the dayside magnetopause along a ridge of maximum magnetic shear.
We will discuss MMS observations at the magnetopause where the satellites encountered the boundary layer and the signatures of magnetic reconnection are sampled for an extended period of time. During the boundary layer observations the IMF By component steadily rotated from negative to positive which moves the location of magnetic reconnection at the magnetopause. The satellites are first connected to an anti-parallel reconnection region and observe accelerated ion beams. The IMF rotation then shifts the anti-parallel reconnection region on the magnetopause to the location of the MMS satellites where an Electron Diffusion Region (EDR) is observed. The continued IMF rotation then causes the relative location of the MMS satellites to encounter signatures of the component reconnection line, where multiple ion beam switches are observed.