Geophysical Research Abstracts
Vol. 19, EGU2017-3691, 2017
EGU General Assembly 2017

Magnetic Islands/Flux Ropes at the Earth's Magnetopause observed by MMS

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Magnetic islands or flux ropes in three dimensions are formed at the magnetopause between two or more active reconnection X-lines. They are often observed in the magnetotail associated with near-Earth reconnection and recently, they have been found to be quite common at the Earth's magnetopause as well. They may have a range of sizes from 100's of km to tens of thousands of km (including Earth Radii-scale size Flux Transfer Events) and their sizes indicate something about their formation. The ion, electron, and magnetic field observations from the MMS spacecraft constellation are used here to try to determine the sizes and possible motion of these structures. From these observations, the origins of these structures and the dynamics of multiple reconnection X-lines at the magnetopause are inferred.