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Flux Tubes in the Earth's Magnetotail MICHAEL HESSE, NASA Goddard Space Flight Center — Magnetic flux ropes are a ubiquitous feature of the dynamics of the nightside current sheet in the Earth's magnetotail. Satellite observations indicate that magnetotail flux ropes can, depending on circumstances, propagate in either the sunward or anti-sunward direction. Furthermore, flux ropes often occur in multiples, indicating that their creation process may either operate quasi-periodically, or that it may create more than one flux rope at a time. The creation mechanism itself, however, remains a subject of current scientific debate. Proposed mechanisms range from flux rope formation by large-scale reconnection and subsequent interactions with the surrounding medium, to kinetic processes that are based either on Hall-electric field effects or multiple island formation by tearing of thin current sheets. This presentation will provide an overview of magnetotail flux rope observations with an emphasis on distilling common flux rope properties. In addition, discuss flux rope formation mechanisms will be evaluated in light of the observational evidence.

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