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Magnetospheric Multiscale Observations of Magnetic Reconnection in the Earth's Magnetosphere

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In this talk, we will review the recent advances in understanding magnetic reconnection in the Earth's magnetosphere by magnetospheric multiscale (MMS) mission. During two years of prime phase at the dayside magnetopause and nightside magnetotail, MMS has detected hundreds of reconnection events with different boundary conditions and guide field strengths. Firstly, we will highlight the characteristics of electron diffusion regions observed during some of these reconnection events. Secondly, a few essential aspects of magnetic flux ropes, which are crucial products and ingredients of magnetic reconnection, will be discussed. MMS observations reveal that flux ropes are important in the energy budget of magnetic reconnection. Thirdly, we will present some novel observations of plasma waves, from lower hybrid frequency to above the electron gyrofrequency, associated with reconnection.

references

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