MAGNETIC RECONNECTION AND FLUX TRANSFER EVENTS OBSERVED IN THE EARTH'S DAYSIDE MAGNETOPAUSE

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ABSTRACT

Magnetic reconnection is a fundamental phenomenon in plasma physics and it is defined as a topological restructuring of magnetic fields due to changes in its magnetic connectivity. Magnetic reconnection is responsible for fast magnetic energy release in large scales, particle acceleration and heating. At the Earth's dayside magnetopause, reconnection plays a very important role in the space weather as changing the plasma convection pattern, injecting particles into high-latitude ionosphere, and disturbing magnetic field observed on the ground. According to in situ observation and numerical simulation, magnetic reconnection at the dayside always occurs somewhere. The location and the interaction efficiency (geoeffectiveness) of the reconnection has a dependency on the solar wind conditions. Dayside reconnection can occurs as *steady* or *transient*, *localized* or *extended*, *forced or spontaneous*. Flux transfer events (FTEs) are considered as a result of transient magnetic reconnection and are often observed in the vicinity of the Earth's magnetopause. Space physics community has been interested in FTEs since their discovery. Recently, computational simulations, and multi-point observations have provided advances to FTE generation and structure formation studies. We will present general aspects about Earth's dayside magnetic reconnection and a survey of FTEs observed in situ.

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