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## Study of a dayside magnetopause reconnection event detected by MMS and related to a large-scale solar wind perturbation

*jeudi 24 mars 2022 10:20 (10 minutes)*

Magnetic reconnection is a fundamental process that is ubiquitous in the universe and allows the conversion of the magnetic field energy into heating and acceleration of plasma. It's also very important as it is responsible for the dominant transport of plasma, momentum, and energy across the magnetopause from the solar wind into the Earth magnetosphere. Coronal Mass Ejections (CMEs) and Corotating Interaction Regions (CIRs) are the primary large-scale propagating structures and important drivers of unusual space weather disturbances causing magnetospheric activity. The present study reports on a magnetic reconnection event detected by the Magnetospheric Multiscale mission (MMS) on 21 October 2015 around 04:40 UT and related to a large-scale solar wind (SW) perturbation impacting the Earth's magnetopause. Based on OMNI data, the event impacting the Earth's magnetosphere is ahead of weak CIR (SW beta~7 and Alfvénic Mach number~15) where the density of solar wind is about  $\sim 20 \text{ cm}^{-3}$  (compared with average SW density  $\sim 3\text{-}10 \text{ cm}^{-3}$ ). Furthermore, the magnetosheath (MSH) density measured by MMS just after the crossing of the magnetopause is about  $\sim 95 \text{ cm}^{-3}$  (compared with average MSH density  $\sim 20 \text{ cm}^{-3}$ ). Reconnection signatures such as ion and electron jets, Hall field, and energy conversion are compared with a "classical" reconnection event observed during quiet solar wind conditions.

### Field

Not in the above

### Day constraints

**Author:** BARAKA, Mohammed

**Orateur:** BARAKA, Mohammed

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