
Observations and modeling of magnetic reconnection driven by CME expansion

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Abstract

Observations from NASA's Solar Dynamics Observatory of an unusually massive filament eruption on 7 June 2011 provide for the very first time images of a magnetic reconnection region in the solar corona. The reconnection occurs at a current sheet that forms between the erupting magnetic structure and a neighbouring active region. This scenario is supported by a numerical simulation of the eruption. Dense, cool back-flowing filament plasma is observed to be re-directed and *heated in situ*, producing coronal-temperature emission around the reconnection region. These results provide *the first direct observational evidence* that a large-scale re-configuration of the coronal magnetic field takes place during solar eruptions via the process of magnetic reconnection.

Keywords: prominence eruption, CME, magnetic reconnection

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