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Magnetic reconnection playing an important role in the acceleration of coronal mass ejections (CMEs) has been widely discussed. However, as CMEs have expansion with a speed comparable to the propagation speed in the corona, it is not clear about which portion of reconnection contributes to the acceleration and expansion separately. To address this question quantitatively, we analyze the dynamic evolution of a CME eruption on 2013 February 27 by Solar and Heliospheric Observatory/Large Angle and Spectrometric Coronagraph observations. This is a moderately fast CME, with a speed of around 600--700 km/s and larger than the solar wind speed. The CME undergoes a smooth but long-lasting acceleration for five hours in the high corona (10--25 Rs). This apparent acceleration is found to be due to CME expansion with a positive acceleration speed ( $a_{\text{exp}}$ ). Magnetic reconnection is found to occur after the CME eruption and to continue during the CME propagation. We estimate the potential acceleration by the drag-based model ( $a_{\text{drag}}$ ), in which the CME deceleration caused by the solar wind drag force is compensated by the acceleration via reconnection. The comparison between  $a_{\text{exp}}$  and  $a_{\text{drag}}$  shows that the contribution of the magnetic reconnection to the expansion is comparable to or even larger than its contribution to the acceleration in the high corona.

Meeting name

PUNCH 2 Science Meeting

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