
On the recurrent eruptions of a large filament observed during August 2012

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Abstract

Eruptive filaments are often known to be associated with CMEs. Some of these eruptive filament associated CMEs are potential drivers of space weather and the cause of major geomagnetic storms at the earth. One of the major constraints in investigating the driving force of these CMEs is the difficulty in estimating their onset time. Particularly in the case of eruptive filaments, monitoring their activation becomes crucial for forewarning of its disappearance in H-alpha and/or in EUVI, hence for estimating the time of onset of associated CME. We report observations of a large filament that underwent recurrent partial eruptions before its complete eruption on August 8, 2012. We implement an automated detection algorithm developed by us for estimation of different attributes of this filament and study its evolution during these eruptions. Based on these attributes we determine the onset of the eruptions. We compare these onset times with that of the associated CMEs observed by LASCO-coronagraphs. This is also used to understand temporal relationship of EUV, X-ray flux variation with disappearance in H- α . Our results show the importance of such studies in understanding the mechanism of CME initiation and possible role of eruptive filaments for the same. This work contributes to the research for European Union Seventh Framework Programme (FP7/2007-2013) for the Coronal Mass Ejections and Solar Energetic Particles (COMESSEP) project under Grant Agreement No. 263252.

Keywords: filaments, CMEs, onset time

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