



Investigations on Geo-effective parameters of Halo Coronal Mass Ejections

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Abstract

We have examined the physical characteristics of 67 halo coronal mass ejections (CMEs) and their geo-effective parameters during the year 2012. By examining all SOHO EIT and SOHO LASCO images of the CMEs, 67 halo CMEs are selected and examined their association with solar activities such X-ray flares and type II bursts. Further, we examined the geomagnetic effects of these entire halo CMEs at 1 AU. We found that 70% of CME events associated with X-ray flares. Out of 67 events, only 9 events associated with type II bursts. It is also found that majority of the type II bursts associated with faster CMEs (>1300 km/s). In particular, the CME direction parameter, which is defined as the maximum ratio of its shorter front from solar disk center and its longer one, is proposed as a new geo-effective parameter (Moon et al., 2005). Its major advantage is that it can be directly estimated from coronagraph observation. It is found that while the location of the associated flare has a poor correlation with the Dst index, the new direction parameter has a relatively good correlation.

Keywords: Sun- Coronal Mass Ejections-type II; bursts-geomagnetic storms.