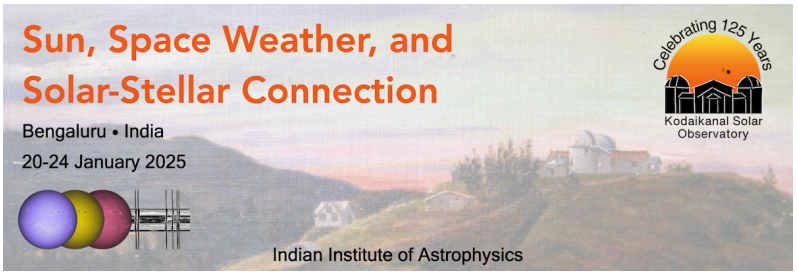

Contribution ID: **7** Type: **Poster**

Characteristics and Geomagnetic Storms of Halo Coronal Mass Ejections

Abstract

We have analysed the geoeffectiveness of halo coronal mass ejections (HCMEs) by investigating a total of 56 events observed between December 2019 and December 2023, during the rising phase of Solar Cycle 25. During this period, we considered only halo CMEs associated with flares, frontside halo CMEs, and excluding the poor events. Halo coronal mass ejections are generally faster and more geoeffective. The average speed of all the halo CMEs is found to be 974 km/s. A total of 50% of HCMEs have speeds greater than or equal to 1000 km/s. Fast CMEs (with speeds >1000 km/s) are mostly decelerated. 93% of fast halo CMEs are associated with M and X class flares. Halo coronal mass ejections originating from regions near the centre of the Sun are more likely to be geoeffective. The majority of fast halo CMEs are located in the North-West and South-West quadrants. Slow halo CMEs do not produce strong geomagnetic storms (Dst ≤ -100 nT). Based on the direction parameter, it is understood that halo CMEs that are more Earth-directed tend to produce stronger geomagnetic storms, while some halo CMEs do not produce strong storms. Only five percent of HCMEs are strongly geoeffective. The number of halo CMEs has increased throughout the study period. The direction parameter and the speed of halo CMEs has a poor correlation with the Dst index. In this paper we illustrate that the characteristics of halo CMEs and its geoeffectiveness.

Contribution Type

Theme

Connecting Solar Corona to Heliosphere

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