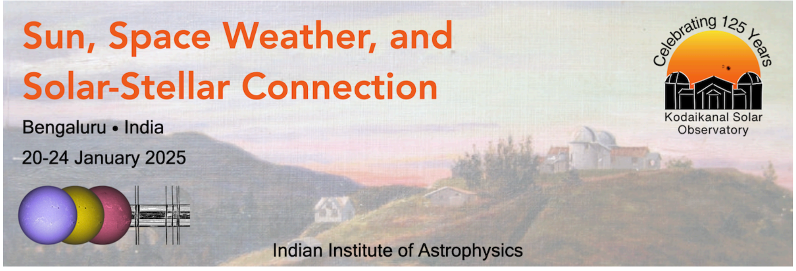

Contribution ID: **169** Type: **Poster**

Analysing Turbulence in Coronal Mass Ejections Using Empirical Mode Decomposition

Coronal mass ejections (CMEs), originating from the sun's corona, are large-scale eruptions of plasma and magnetic flux that propagate into interplanetary space, and are capable of significantly influencing the dynamic environment of the inner solar system. Previous studies have established that CMEs exhibit turbulent behavior, characterized by energy cascades from larger to smaller scales through the formation of eddies. This study investigates the turbulence properties at different stages of a CME evolution. We divide the CME event into three intervals, characterised by the arrival of the CME shock and the magnetic cloud region. The magnetic field signal was decomposed using the method of empirical mode decomposition (EMD) into intrinsic mode functions (IMFs), which capture inherent oscillatory modes within the data. For each magnetic field component (Bx, By, Bz), we generated Fourier power spectra and Hilbert-Huang spectra, representing the power distribution across frequencies within the three intervals. These spectra can provide insights into the turbulent nature of the magnetic field during the different stages of CME evolution.

Contribution Type

Theme

Energetic Phenomena

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