



Contribution ID: 83

Type: Poster

## Sun-as-a-star Differential Emission Measure analysis of Coronal Dimming associated with CMEs

Coronal dimmings on the Sun are transient reductions in coronal plasma emissions, often associated with Coronal Mass Ejections (CMEs) triggered by solar flares or filament eruptions. These dimmings typically last between 3 to 12 hours, characterized by a rapid decrease in intensity followed by a gradual recovery. In this study, we conduct a differential emission measure (DEM) analysis using a Sun-as-a-star approach to explore the relationship between dimming depth and emission measures across various temperature bands. We utilize data from the Atmospheric Imaging Assembly (AIA) aboard the Solar Dynamics Observatory (SDO) to perform DEM analysis on six CME-associated events, including four flaring events and two filament eruptions. Our results indicate that while the temperature band for maximum dimming varies across events, significant dimmings are predominantly observed in the 5.85–6.45 log K temperature range. Emission in hotter temperature bands shows little or no dimming. Additionally, we calculate the DEM-weighted temperature of the corona and observe a temperature difference between pre-event conditions and the peak dimming phase. Interestingly, we detect signs of coronal heating in the early stages of the dimming, suggesting complex thermal responses in the corona during CME evolution. These findings provide critical insights into the coronal response to CME events and the associated heating of coronal plasma. Furthermore, they enhance our understanding of the solar-stellar connection and have significant implications for space weather forecasting.

### Contribution Type

Poster

### Theme

Solar - Stellar Connections

**Primary authors:** Mr VITTAL SHENOY, Dheeraj (Indian Institute of Astrophysics); Dr SAMANTA, Tanmoy (Indian Institute of Astrophysics)

**Presenter:** Mr VITTAL SHENOY, Dheeraj (Indian Institute of Astrophysics)