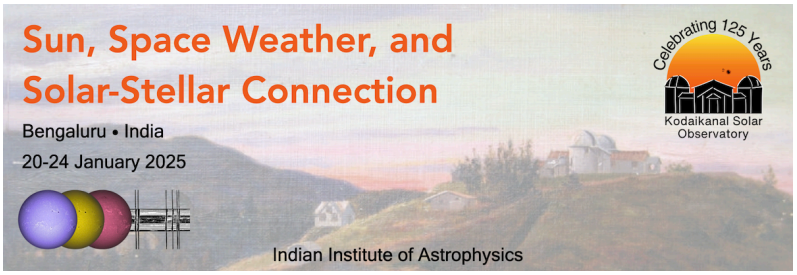

Contribution ID: **161** Type: **Poster**

Source Region of Intense Solar Radio Burst During an Eruptive Flare: Correlating Flare-CME Signatures from Udaipur-CALLISTO Dynamic Spectrum and AIA/SDO Observations

Exploration of solar radio dynamic spectrum provides us with an opportunity to probe the multi-scale energetic phenomena during coronal transients including large-scale eruptions. To monitor solar radio bursts at metric wavelengths, the Udaipur Solar Observatory, Physical Research Laboratory (USO-PRL) operates a low-cost solar radio observation facility based on CALLISTO spectrometers. In this work, we present a comprehensive study focusing on the origin of solar radio bursts observed on 10 May 2024 around 06:27-07:50 UT. These radio bursts were associated with an eruptive X4.0 class flare originating from the active region NOAA 13664. The examination of the GOES soft X-ray light curves and Atmospheric Imaging Assembly (AIA) extreme ultraviolet imaging reveal typical characteristics of eruptive flares, such as parallel flare ribbons and post-flare loop systems. HMI line-of-sight magnetograms display a complex morphology with a significantly long polarity inversion line (PIL). The eruption of the magnetic flux rope, lying above the PIL, produced simultaneous type III and type II radio bursts. These observations suggest that the event involved the ejection of relativistic electrons and energetic particles from the Sun, along with the outward propagation of a coronal shock associated with a coronal mass ejection (CME). We also explore the existing ideas in both ideal- and resistive-MHD eruption models to understand the CME initiation process in the source region.

Contribution Type

Theme

Energetic Phenomena

Primary author: PATEL, Binal (Udaipur Solar Observatory, Physical Research Laboratory)

Co-authors: JOSHI, Bhuwan (Udaipur Solar Observatory, Physical Research Laboratory); UPADHYAY, Kushagra (Udaipur Solar Observatory, Physical Research Laboratory)

Presenter: PATEL, Binal (Udaipur Solar Observatory, Physical Research Laboratory)

Session Classification: Poster Session-II / Coffee Break