



भारतीय ताराभौतिकी संस्थान
INDIAN INSTITUTE OF ASTROPHYSICS
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स्नातक अध्ययन मंडल **Board of Graduate Studies.**

STUDENT SEMINAR
(Part of Comprehensive Examination)

Speaker: Ms. Kanika Sharma

शीर्षक Title: Thermal and Temporal Evolution of CME-Driven Coronal Dimming Recovery.

सार Abstract

The Sun is a dynamic star that episodically releases energy and plasma into the heliosphere through coronal mass ejections (CMEs). These eruptions involve the large-scale expulsion of magnetized plasma from the solar corona and play a crucial role in solar–terrestrial interactions. One of the most prominent low-coronal signatures of CMEs is coronal dimming, observed as a temporary reduction in extreme ultraviolet (EUV) and soft X-ray (SXR) emission. Such dimming regions form when magnetic field lines open or stretch during eruptions, indicating plasma evacuation into the heliosphere. The evolution of coronal dimming during the impulsive phase provides insights into CME initiation, mass loss, and kinematics, whereas the recovery phase reflects plasma refilling, magnetic field reconfiguration, and the thermal evolution of the corona.

In this work, we analyze the recovery phase of an off-limb dimming event associated with a CME eruption using Differential Emission Measure (DEM) diagnostics. The temporal and thermal evolution of the dimming is investigated over approximately 12 hours. The dimming is most pronounced in plasma within the 1–3 MK temperature range. We find that the recovery proceeds via two distinct pathways: (i) inward progression from the dimming boundaries and (ii) upward progression from lower to higher coronal heights. These results support a scenario in which interchange reconnection at the boundaries and flux emergence within the dimming region act as the primary mechanisms governing the recovery process.

शुक्रवार Friday 27, मार्च March 2026

समय Time: 11 AM

स्थान Venue: प्रेक्षागृह Auditorium

सभी का स्वागत है All are welcome