



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 Annu.

**शीर्षक Title:** Investigating Small-Scale Solar Features Using High-Resolution Observations

**सार Abstract**

The solar atmosphere exhibits various small-scale features, which are observed to be very dynamic and complex structures. The advent of modern instruments with high spatial, spectral and temporal resolution has aided us in studying the evolution and different dynamical properties of fine-scale features. In this comprehensive presentation, I will mainly discuss small-scale fine structure loops in the lower solar atmosphere. We conducted a comprehensive analysis of small-scale loops utilizing data from the Interface Region Imaging Spectrograph (IRIS), the Goode Solar Telescope (GST) at Big Bear Solar Observatory, and the Atmospheric Imaging Assembly (AIA) and the Helioseismic Magnetic Imager (HMI) onboard the Solar Dynamics Observatory (SDO), aiming to elucidate the underlying process behind their formation. Our findings reveal that these loops, with lengths of  $\sim 3.5$  Mm and heights of  $\sim 1$  Mm, appear as bright emissions in H $\alpha$  wing images and exhibit significant enhancements in IRIS 1330 Å spectra, suggesting plasmoid-mediated reconnection. Additionally, we observed upward-erupting jets above these loops across various passbands. Furthermore, Differential Emission Measurement analysis reveals an enhanced emission measure at the location of these loops, suggesting the presence of plasma exceeding 1 MK. Based on our observations, we propose that these loops and associated jets align with the minifilament eruption model.

In a newly initiated work, we are investigating the nature of the elongated granule utilizing the high resolution observations of the Daniel K. Inouye Solar Telescope (DKIST), AIA and HMI onboard SDO. Granules, characterized by irregular shapes and about 1-2 Mm in size, are ubiquitous on the quiet Sun's surface. Elongated granulation is one distinct phenomenon in the photosphere, which is generally considered an indicator of emerging magnetic flux. I will present some initial findings of this work.

गुरुवार Thursday 19, सितम्बर September 2024

Time: 11:30 AM

Venue: प्रेक्षागृह Auditorium

सभी का स्वागत है All are welcome.