

Sun, Space Weather, and Solar-Stellar Connection



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Type: **Invited talk**

National Large Solar Telescope (NLST) of India

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National Large Solar Telescope, a state-of-the-art 2-meter telescope, is designed to revolutionize solar atmospheric research. Its primary goal is to conduct high-resolution observations, both spatially and spectrally, of the Sun's outer layers. To ensure optimal performance, a rigorous site characterization program was initiated in 2007. This led to the selection of two prime locations in the Himalayas, situated above 4,000 meters. These sites offer exceptionally low water vapor content and are shielded from monsoon disruptions, providing ideal conditions for solar observations.

The NLST's innovative optical design employs an on-axis Gregorian configuration with a minimal number of optical elements. This reduces the number of reflections, enhancing throughput and minimizing polarization effects. Furthermore, the telescope incorporates high-order adaptive optics to achieve near-diffraction-limited imaging, compensating for atmospheric turbulence. To mitigate atmospheric and thermal disturbances, the NLST will operate with a fully open dome, maximizing its capabilities. The telescope will be mounted on a 20-meter tall tower, providing additional stability and isolation from ground-based disturbances. The NLST's post-focus instrumentation suite includes a range of advanced devices, such as broad-band and tunable Fabry-Perot narrow-band imagers, and a high-resolution spectropolarimeter.

Led by the Indian Institute of Astrophysics and supported by domestic and international collaborators, the National Large Solar Telescope (NLST) project will significantly advance our understanding of the Sun. Strategically located in Asia, the NLST will complement existing solar observatories in the United States and Europe, providing valuable new insights into our nearest star.

Contribution Type

Theme

Solar Magnetism in High-Resolution

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Session Classification: Instruments/Facilities and Science: New and Upcoming