Institute for Space Weather Sciences Colloquium

Thursday, 3rd of October 2024, 1pm ET

via Zoom, meeting ID: 917 2169 7568, password: isws

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Solar Probing Solar Photospheric Magnetic Fields with DKIST Observations

The solar photosphere is filled with fine-scale magnetic flux tubes buffeted by convective motion. The 4-meter Daniel K. Inouye Solar Telescope (DKIST) in Hawaii will provide high-resolution spectropolarimetry that can drastically improve our understanding of these magnetic fields. The complexity and the volume of the DKIST data require advanced analysis techniques, including assistance from numerical simulation and machine learning. Here I describe several initial efforts on this front. Topics include: (1) developing a fast Stokes inversion model based on deep-learning techniques, and (2) quantifying the diagnostic capability of magnetoconvection with the DKIST/DL-NIRSP instrument.

Dr. Xudong Sun is an Associate Astronomer at the Institute for Astronomy, University of Hawaiʻi at Mānoa. He obtained a PhD degree in Physics from Stanford University, and a BS degree in Earth and Space Sciences from the University of Science and Technology of China. He is a member of the science working group for DKIST, and a science team member of SDO/HMI. He is interested in a variety of solar and stellar physical processes, in particular those that involve the magnetic fields.