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Guided by Physics, Powered by AI: Physics-Informed Machine Learning in Solar Physics



DATE: Wednesday, May 21, 2025

TIME: 11:00 AM – 12:00 PM MT (VIRTUAL)

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SUMMARY: The limited ability to directly observe the 3D distribution of plasma and magnetic fields in the solar atmosphere remains a central challenge in solar and heliophysics. However, understanding the structure and evolution of the solar atmosphere is crucial for advancing our knowledge of heliospheric processes and their effects on Earth. Although the Sun is continuously observed, imaging data remain inherently difficult to interpret and cover only a fraction of the heliosphere.

In this talk, I will introduce Physics-Informed Neural Networks (PINNs) and discuss their transformative potential for data-driven simulations in solar physics.

Robert Jarolim is a NASA Jack Eddy Postdoctoral Fellow at the High Altitude Observatory in Boulder, CO. He completed his PhD in 2023 at the University of Graz in Austria and received the ESPD–Patricia Edwin Award, the PhD Prize of the International Astronomical Union, and the Josef Krainer Promotional Award for his thesis.

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