

Thursday April 10, 2025

3:30 PM - 4:30 PM, Virtual

<https://asu.zoom.us/j/87825544437>

Seeing The Unseen: Imaging Discoveries From Natural Quasicrystals To Quantum Interfaces

Dr. Nan Yao

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Abstract:

This talk delves into groundbreaking discoveries in materials science, starting with the first natural quasicrystal, which redefined our understanding of order and symmetry in complex structures. Highlighting the pivotal role of electron microscopy, we will explore advances in atomic force microscopy, including single-atom bond breaking and the imaging of orbital signatures in Fe and Co atoms. The seminar will also uncover new insights into water nucleation on surfaces, challenging traditional models of surface behavior, and examine the “CO puzzle” on metal surfaces, revealing complex quantum interactions. Connecting ancient quasicrystals to cutting-edge quantum studies, this talk showcases how imaging techniques continue to push the boundaries of materials physics across time and scale.

Biography:

Professor Nan Yao is a leading expert in materials characterization, bridging science and engineering. He is the founding director of Princeton University’s Imaging and Analysis Center, recognized as one of the world’s top facilities for advanced materials imaging. With over 350 scientific publications, two books, and the co-discovery of the first natural quasicrystal, his work has shaped modern materials science. A dedicated educator, he has taught and mentored thousands of students, earning 12 teaching awards. Professor Yao is a fellow of the Microscopy Society of America, the Royal Microscopical Society, and the AAAS. He earned his Ph.D. in physics and electron microscopy from Arizona State University and previously held research positions at Shell Development and ExxonMobil before joining Princeton in 1993.