

Condensed Matter Physics Seminar Series

Low-Dimensional Quantum Materials Design Through Atomically Precise Film Synthesis

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Low-dimensional quantum materials are at the forefront of scientific exploration due to their extraordinary electronic and magnetic characteristics, distinct from those observed in bulk systems. Among the various synthesis techniques, Molecular-beam epitaxy (MBE) emerges as a leading technique for developing these innovative materials. This thin-film deposition approach enables precise engineering of quantum materials, unlocking fascinating properties such as superconductivity, quantum magnetism, and topological states. In this talk, I will discuss how to utilize MBE, along with characterization tools such as angle-resolved photoemission spectroscopy (ARPES) and resonant x-ray scattering (RXS), to unveil a completely new antiferromagnetic (AFM) metal phase in transition metal oxide nickelate. Additionally, I will cover the exploration of the superconductivity in nickelates and iron-based chalcogenide.

**Friday, February 27th at 11am
4-330 PAB**