



Seminar

On thermal transport puzzles of strongly correlated quantum materials

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The University of Illinois at Urbana-Champaign

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Abstract

Thermal transport is an increasingly important experimental approach to probe extraordinary physics in strongly correlated quantum materials. In recent year, many unexpected magnetothermal transport signatures have been observed including large thermal Hall effects in a few important insulators (e.g., SrTiO₃ and La₂CuO₄), creating puzzles in the community. In this talk I will show that the key to these puzzles lies on the phonons and how they respond to magnetic field efficiently. I will also discuss possible mechanisms underlying these experimental observations and picture future directions towards probing exotic phases of matter through analyzing thermal transport and phonon dynamics in a more revealing manner.

About the Speaker

Dr. Xiaoqi Sun is currently a Gordon and Betty Moore Postdoctoral Scholar at the Institute for Condensed Matter Theory in the University of Illinois at Urbana-Champaign. He completed his B.S. in physics at Tsinghua University, and his Ph.D. in physics at Stanford University. His current research interests involve topological phenomena out of equilibrium, dynamics and transport in quantum materials, and interdisciplinary studies at the intersection of many-body physics, machine learning and quantum information science.