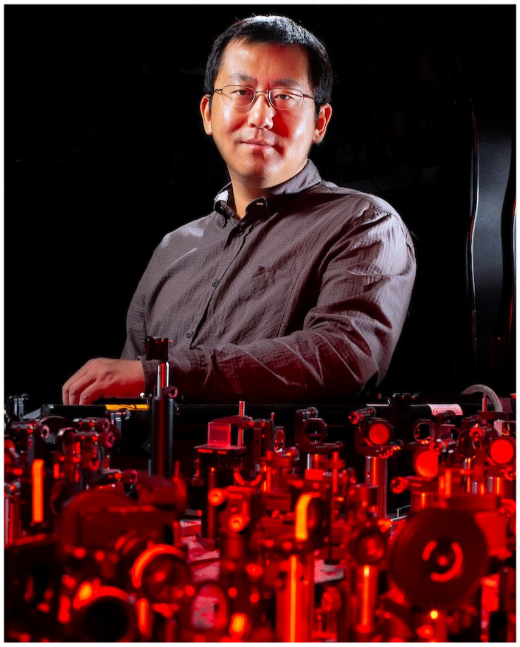
NCMN SUMMER '21 SEMINAR



JIGANG WANG

JUNE 2 @ 4PM

IOWA STATE UNIVERSITY

Terahertz Light-Driven Quantum Systems

ABSTRACT

Wide-scale adoption of quantum computing requires understanding complex materials and functional systems in which fragile quantum states are both protected from their noisy environments and coherently driven out-of-equilibrium. The emerging lightwave supercurrent and topological current control offer promise of realizing nearly dissipationless coherent transport against impurity scattering at terahertz (THz) speed with negligible energy cost.

In this talk, I will discuss strategic advantages, with help of some recent examples from our research, of implementing this control concept to measure, manipulate and harvest exceptional photocurrent transport, pseudo-spin quantum entanglement and dynamic symmetry switches in some model coherent states of matter in topological materials and superconductors.

I will also present the emerging THz coherent spectroscopy and microscopy tools at space-time limits of nanometre and femtosecond that facilitate reaching such a fundamental understanding and control of quantum states by light.*

BIO

Jigang Wang is currently a full professor in the Department of Physics and Astronomy at Iowa State University and senior staff scientist in Ames laboratory of US department of Energy. He received his Ph.D. from Rice University at 2005 and joined Lawrence Berkeley National Laboratory as a postdoctoral fellow from 2005-2008. He joined Iowa State University as a faculty member since 2008. His research broadly concerns with non-equilibrium quantum dynamics and coherent control using ultrafast spectroscopy and microscopy. He is recipient of the NSF CAREER award and Keck foundation award for quantum microscopy.

Wang's website: https://faculty.sites.iastate.edu/jgwang/

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Host: Wei Bao
Electrical & Computer Engineering

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