Colloquium

Department of Physics, Temple University

Shedding Light on Quantum Materials

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Quantum materials host a vast array of emergent electronic phenomena, including high-temperature superconductivity, colossal magnetoresistance, and nanoscale charge / spin ordering. One of the grand challenges of this field is to develop an understanding of how strong quantum many-body interactions can influence the electronic structure of these materials and give rise to novel electronic and magnetic phenomena and ground states. I will describe how we use angle-resolved photoemission spectroscopy (ARPES), a powerful technique for directly measuring the electronic structure and quantum many-body interactions, to reveal new insights into materials such as unconventional superconductors. I will focus particularly on our development of new capabilities which integrate ARPES and molecular beam epitaxy (MBE) synthesis. This combination allows us, for the first time, to create, observe, and control states which emerge at artificially synthesized, atomically precise interfaces and heterostructures of quantum materials.

Monday, October 30, 2017 at 3:00pm
SERC, Room 116
Refreshments served at 2:45pm