



Seminar

Control of quantum states in spin-orbit-entangled materials

Prof. Gang Cao

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Time: 10: 30 Am, June 4, 2019 (Tuesday)

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Venue: Room W563, Physics building, Peking University

地点: 北京大学物理楼, 西563会议室

Abstract

A delicate balance between spin-orbit and other competing interactions inherent in $4d/5d$ materials offers a unique range of opportunities to uncover exotic states and physical properties that are intimately coupled to the crystal structure [1]. This unique feature provides us fertile ground to control quantum states by tuning the lattice of these materials. In this talk, we report our recent studies on electrical-current controlled phenomena in iridates [2] and ruthenates, and our recent observation of a quantum liquid state in an un-frustrated square lattice [3].

Refs: [1] *The Challenge of Spin-Orbit-Tuned Ground-States in the Iridates: A Key Issues Review*, Gang Cao and P. Schlottmann, Rep. Prog. Phys. 81 042502 (2018); [2] *Electrical Control of Structural and Physical Properties via Spin-Orbit Interactions in Sr2IrO4*, G. Cao, et al. Phys. Rev. Lett. 120, 017201 (2018); [3] *Quantum Liquid from Strange Frustration in the Trimer Magnet Ba4Ir3O10*, G. Cao, et al., arXiv:1901.04125.

About the speaker

Gang Cao (Ph.D. 1993 Temple University) is a professor at University of Colorado-Boulder. He was *Jack and Linda Gill Eminent Professor* and Director of the Center for Advanced Materials at University of Kentucky before moving to the University of Colorado in 2016. His research interests include discovery and study of novel quantum materials; single-crystal synthesis; physics of complex oxides; high-field, low-temperature, and high-pressure material properties. He has published 230 articles with citations over 10900. He is a fellow of the American Physical Society since 2009.