

Nanjing University

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Time: 4:00pm, April. 10, 2013 (Wednesday) 时间: 2013年4月10日(周三)下午4:00 Venue: Conference Room 607, Science Building 5 地点: 理科五号楼607会议室

Abstract

In 5d transition metal oxides such as the iridates and osmates, novel properties arise from the interplay of electron correlations and spin-orbit interactions. We investigate the electronic structure of the pyrochlore iridates, Spinel and Perovskite osmates using density functional theory, LDA+U method, and effective low energy models. We propose that pyrochlore iridates can be a Weyl semimetal, with vanishing density of states at the Fermi energy. It also exhibits topological properties - manifested by special surface states in the form of Fermi arcs, that connect the bulk Weyl points. We propose that hypothetical spinel osmates compounds such as CaOs2O4 and SrOs2O4 show some exotic electronic and magnetic properties in a reasonable range of on-site Coulomb correlation U such as ferromagnetism and orbital magnetoelectric effect characteristic to Axion electrodynamics. We also confirm NaOsO3 is a slater insulator.

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About the Speaker

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