

Abstract Submitted
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High-energy electronic excitations in Sr_2IrO_4 observed by Raman scattering¹ JHIH-AN YANG, YI-PING HUANG, MICHAEL HERMELE, Univ of Colorado - Boulder, TONGFEI QI, GANG CAO, University of Kentucky, DMITRY REZNIK, Univ of Colorado - Boulder — The interplay between spin-orbit interaction, on-site coulomb correlation, crystal field splitting, and inter-site hopping leads to a novel insulating behavior in Sr_2IrO_4 as the realization of the $J_{eff} = 1/2$ state. We report results of a large-shift Raman scattering investigation of electronic excitations in Sr_2IrO_4 . We found two high-energy excitations at 690 meV and 680 meV with A_{1g} and B_{1g} symmetry respectively. The two peaks have different temperature and Rh-doping dependences. Symmetry analysis of the dd transitions that contribute to Raman signals will also be presented. The observed peaks are consistent with the scenario of excitons associated with inter-site dd transitions without pseudospin-flip.

¹NSF, DOE, and BES

Jih-An Yang
Univ of Colorado - Boulder

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