Weekly Seminar

Probing magnetic and electronic excitations with resonant inelastic X-ray scattering

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Time: 4:00 pm, Nov. 6th, 2013 (Wednesday)
时间：2013年11月6日（周三）下午4:00
Venue: Conference Room A (607), No. 5 Science Building
地点：理科五号楼607会议室

Abstract

Experimental techniques which probe the excitations have been essential for material study. Different from the conventionally used neutron inelastic scattering and Raman spectroscopy, resonant inelastic X-ray scattering (RIXS) is a very recently developed method which couples to spin, charge, orbital and lattice degrees of freedom, and has large dynamic and momentum ranges. I will first give an introduction to this new powerful technique, and then discuss its applications with two examples, namely the strongly spin-orbit coupled iridates and the half doped manganite.

In the iridium oxides, the strong spin-orbit coupling of the 5d iridium electrons entangles the orbital and spin degrees of freedom, providing opportunities for exotic magnetic states with highly anisotropic exchange interactions. RIXS is a unique tool to explore this new class of materials. On half doped manganite La0.5Sr1.5MnO4, we demonstrated that RIXS could be used to study the screening dynamics to a local charge perturbation, which has applications on many doped systems, such as cuprates.

About the Speaker

After graduated from the University of Science and Technology of China, Xuerong Liu obtained his Ph.D. from the University of California, San Diego in 2009. He then worked as a post-doc in the X-ray scattering group at Brookhaven National Laboratory, U.S.A. In 2012, he continued to work in the same group as a visiting scientist, supported by Young International Scientist Scholarship from IOP, CAS, China. In 2013, he joined IOP, CAS, China as an associated professor under the CAS Hundred Talented Plan. His research has been focused on developing and applying the resonant inelastic X-ray scattering (RIXS) technique to study the electronic and magnetic dynamics in transition metal oxides.