



INDO SWISS JOINT RESEARCH PROGRAMME (ISJRP)

JOINT RESEARCH PROJECT

ABSTRACT

Grant No.: 138851

EXOTIC MAGNETIC AND ELECTRONIC PROPERTIES IN NOVEL 4D AND 5D TRANSITION-METAL OXIDES

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Official start date of the project: 1st January 2012
Actual start date of the project: 21 May 2012
Project finish date: 20 May 2015

1) PROJECT ABSTRACT

Using the complementary techniques of nuclear magnetic resonance (NMR), neutron scattering (diffraction and inelastic), in addition to bulk susceptibility, electronic transport and heat capacity measurements, we propose to explore in detail the magnetic and electronic behaviour of selected oxides based on *4d* and *5d* transition metals including Ir, Ru and Mo. In particular, we will focus on low-dimensional and geometrically frustrated systems, aiming to identify complex properties linked to strong correlation effects. We will subsequently explore the effect of dopants/substitutions as a means to modify and tailor the magnetic and electrical behaviour. Our studies will help to improve the fundamental understanding of strongly correlated systems and contribute to the exploration of new oxide-based materials for future correlated electron technology.

Adding to the direct scientific goals, this Indo-Swiss research project is intended to generate a broader collaboration and exchange of expertise, and will provide young scientists opportunities to acquire experience in the two countries' respective research environments. Integrated efforts shall widen the symbiosis by sharing samples and applying further experimental techniques in collaboration with other research groups both in India and in Switzerland.