Notes

Organizers

Nandini Trivedi

Mohit Randeria

Patrick Woodward*

Rolando Valdés Aguilar

Yuan-Ming Lu

Department of Physics, The Ohio State University

*Department of Chemistry, The Ohio State University

Information

Jaimie Mollison – mollison.4@osu.edu

http://cem.osu.edu/news/soc-u

Spin-orbit Coupling and Magnetism in Correlated Transition Metal Oxides

May 3 – 7, 2015

This workshop is supported by the Institute for Complex Adaptive Matter, the Center for Emergent Materials, an NSF MRSEC, and the DOE, with additional support from the Department of Physics, the Institute for Materials Research, and the Women's Place at OSU.

The Ohio State University

Program

Sunday, May 3

Tutorials	
9:00 – 10:30a	Tutorial/Discussion – **Gang Cao**, *University of Kentucky* "Correlations and SOC: Survey of experiments on Iridates"
10:30 – 11:00a	Coffee Break
11:00 – 12:30p	Tutorial/Discussion – **Yong Baek Kim**, *University of Toronto* "Correlated Quantum Phenomena in the Strong Spin-Orbit Regime"
12:30 – 2:00p	Lunch
2:00 – 3:30p	Tutorial/Discussion – **Jean-Marc Triscone**, *University of Geneva* "Interfacial Effects in Novel Oxide Heterostructures"
3:30 – 4:00p	Coffee Break
4:00 – 5:30p	Tutorial/Discussion – **Ryotaro Arita**, *RIKEN* "Electronic Structure of Correlated Oxides"

Monday, May 4

8:00 – 8:50a	Breakfast & Registration
8:50 – 9:10a	Welcome by **Chris Hammel**
Morning	**Session Chair: Nandini Trivedi**
9:10 – 9:50a	**Hidenori Takagi**, *Max Planck Institute* "Strong Spin Orbit Coupling and Honeycomb Physics in Complex Ir Oxides"
9:50 – 10:20a	Coffee Break
10:20 – 11:00a	**Yong Baek Kim**, *University of Toronto* "Theory of Topological and Magnetic Phases in 3D Honeycomb Iridates"
11:00 – 11:40a	**James Analytis**, *University of California, Berkeley* "Novel transport and magnetic phenomena in strongly spin-orbit coupled materials"
11:40 – 12:20p	**Natalia Perkins**, *University of Minnesota* "Anisotropic exchange interactions in honeycomb iridates"
12:20 – 2:00p	Lunch
Afternoon	**Session Chair: Patrick Woodward**
2:00 – 2:40p	**Kentaro Ueda,** *University of Tokyo* "Magnetic field-induced insulator-metal transition in pyrochlore iridates"
2:40 – 3:20p	**John Mitchell**, *Argonne National Laboratory* "Sodium Iridates: Progress in Physics and Materials"
3:20 – 3:50p	Coffee Break
3:50 – 4:30p	**Sergej Savrasov**, *University of California, Davis* "Turning Band Insulators into Exotic Superconductors"
4:30 onwards	Discussion, Poster Session and Dinner (Atrium)

Tuesday, May 5

8:00 – 8:30a	Breakfast
Morning	**Session Chair: Mohit Randeria**
8:30 – 9:10a	**Gang Cao**, *University of Kentucky* "Spin-orbit tuned ground states in iridates"
9:10 – 9:50a	**Yeongkwan Kim**, *Lawrence Berkeley National Laboratory* "Fermiology of electron doped Sr_2IrO_4: From Fermi arcs to d-wave node"
9:50 – 10:20a	Coffee Break
10:20 – 11:00a	**Harold Hwang**, *Stanford University* "Inelastic Electron Tunneling Spectroscopy in Oxide Heterostructures"
11:00 – 11:40a	**Jean-Marc Triscone**, *University of Geneva* "Tunable Spin-orbit and 2-d Superconductivity at the $LaAlO_3/SrTiO_3$ Interface"
11:40 – 12:20p	**Susanne Stemmer**, *UC Santa Barbara* "Probing non-Fermi liquid behavior with oxide heterostructures"
12:20 – 2:00p	Lunch
Afternoon	**Session Chair: Adam Kaminski**
2:00 – 2:40p	**Daniel Dessau**, *University of Colorado, Boulder* "Experimental electronic structure of the doped J = ½ Mott insulator"
2:40 – 3:20p	**Kyle Shen**, *Cornell University* "Interplay of Spin-Orbit Coupling, Octahedral Rotations, and Dimensionality in Perovskite Iridates"
3:20 – 3:50p	Coffee Break
3:50 – 4:30p	**Ryotaro Arita**, *RIKEN* "Control of Dzyaloshinskii-Moriya interaction in $Mn_{1-x}Fe_xGe$: toward skyrmion crystal engineering"
4:30 – 5:30p	Discussion
6:00p	Dinner Banquet (Blackwell)

Wednesday, May 6

8:00 – 8:30a	Breakfast
Morning	**Session Chair: Yuan-Ming Lu**
8:30 – 9:10a	**Young Lee**, *Stanford University* "Two faces of kagome magnets: quantum spin liquids and topological magnons"
9:10 – 9:50a	**George Jackeli**, *Max Planck Institute* "Magnetic order and excitations in iridium oxides"
9:50 – 10:20a	Coffee Break
10:20 – 11:00a	**Hae-Young Kee**, *University of Toronto* "Topological Crystalline Metal in Perovskite Iridates"
11:00 – 11:40a	**Daniel Haskel**, *Argonne National Laboratory* "Possible quantum spin liquid state in square lattice of J_{eff} = ½ moments at high pressure"
11:40 – 12:20p	**Sang-Wook Cheong**, *Rutgers University* "Colossal magnetoelectricity and chiral/polar domains in corundum-related Ni_3TeO_6"
12:20 – 2:00p	Lunch
Afternoon	**Session Chair: Patrick Woodward**
2:00 – 2:40p	**Arun Paramekanti**, *University of Toronto* "Chern band metals and unusual magnetic Mott insulators in 'heavy' double perovskites"
2:40 – 3:20p	**Jinguang Cheng**, *IOP, Chinese Academy of Sciences* "Structure-property evolution in the perovskite ruthenates and iridates"
3:20 – 3:50p	Coffee Break
3:50 – 4:30p	**Tanusri Saha-Dasgupta**, *S. N. Bose National Centre for Basic Sciences* "Role of A site cation in Properties of Perovskites: Insights from first-principles study"
4:30 – 5:30p	Discussion
	Dinner

Thursday, May 7

8:00 – 8:30a	Breakfast
Morning	**Session Chair: Rolando Valdés Aguilar**
8:30 – 9:10a	**Fengyuan Yang,** *Ohio State University* "Inverse spin Hall effect excited by spin pumping: A measure of spin-orbit coupling"
9:10 – 9:50a	**Ashvin Vishwanath**, *University of California, Berkeley* "Extensions of Oshikawa-Hastings theorem to systems with spin-orbit coupling"
9:50 – 10:20a	Coffee Break
10:20 – 11:00a	**Jiaqiang Yan**, *University of Tennessee, Oak Ridge National Laboratory* "High temperature antiferromagnetic order of a honeycomb compound $SrRu_2O_6$: what's beyond d^3?"
11:00 – 11:40a	**Daniel Khomskii**, *University of Cologne* "Orbitals in solids: some recent developments"
11:40 – 12:20p	**Bernhard Keimer**, *Max Planck Institute for Solid State Research* "Spin, charge, and orbital correlations in model materials near metal-insulator transitions"
12:20 – 2:00p	Discussion/Lunch