

Topological and Strongly Correlated Phases in Cold Atoms

Wednesday, 29 April 2015 -- TUTORIAL

- 10:40** Welcome and Introductions
- 10:45-12:00 Tutorial: "The Geometry of Wannier States"
Erich Mueller, Cornell University
- 12:00-1:00** Lunch at PCTS, Jadwin Hall, Fourth Floor
- 1:00-2:15 Tutorial: "Realizing and Probing Topological Bloch Bands with Ultracold Atoms"
Immanuel Bloch, Max Planck Institute
- 2:15-3:30 Tutorial: "Strong Correlations and Fractional Quantum Hall Phases of Cold Atoms"
Nigel Cooper, Cambridge University
- 3:30-4:00** Coffee Break
- 4:00-5:15 Tutorial: "Artificial gauge fields and spin-orbit coupling from Berry's phases"
Ian Spielman, University of Maryland
- 5:15 – 7:00** Welcome Conference Reception at PCTS (free and open to all conference attendees at tutorial and conference.)

Thursday, 30 April 2015 -- CONFERENCE

- 8:00 am** Coffee and light continental breakfast fare
- 8:50 am Welcome and Introductions
David Huse/Waseem Bakr, Princeton University
- Chair:** Waseem Bakr
- 9:00 "Gauge fields in multi-level atoms: magnetism and synthetic dimensions"
Ian Spielman, University of Maryland
- 9:45 "Observation of chiral edge states with neutral fermions in synthetic Hall ribbons"
Carlo Sias, European Lab for Non-linear Spectroscopy
- 10:30-11:00** Coffee Break
- 11:00-11:45 "Anomalous topological charge pumping"
Erich Mueller, Cornell University

Thursday, 30 April 2015 – CONFERENCE (continued)

- 11:45-12:30 "Signatures of Fractional Exclusion Statistics in the Spectroscopy of Quantum Hall Droplets"
Nigel Cooper, Cambridge University
- 12:30 - 1:30** Lunch at PCTS, Jadwin Hall, Fourth Floor
- Chair:** Curt von Keyserlingk/Titus Neupert
- 1:30-2:15 "A cold grip on topology: the Haldane model"
Tilman Esslinger, ETH Zurich
- 2:15-3:00 "Topological and strong-correlation physics in the p_x/p_y -orbital bands in the honeycomb lattice - from optical lattices to solid states"
Congjun Wu, UC San Diego
- 3:00-3:30** Coffee Break
- 3:30-4:15 "Quantum magnetism at temperature regimes above quantum degeneracy"
Ana-Maria Rey, JILA/U. Colorado
- 4:15-5:00 "Measuring Entanglement Entropy in Synthetic Matter"
Markus Greiner, Harvard University
- 8:00 pm** 40th Annual Donald R. Hamilton Lecturer
"Fun with Ultracold Atoms"
Deborah Jin, JILA and University of Colorado
McDonnell Hall, A-02 Auditorium

Friday, 1 May 2015 -- CONFERENCE

- 8:00 am** Coffee and light continental breakfast fare
- Chair:** David Huse
- 9:00 "From Many-Body Localization to Novel Quantum Magnets: New Frontiers for Ultracold Gases"
Immanuel Bloch, Max Planck Institute
- 9:45 "Quantum many-body localization: new insights from theory and experiment"
Ehud Altman, Weizmann Institute
- 10:30-11:00** Coffee Break
- 11:00-11:45 "Quantum impurities in systems of ultracold atoms"
Eugene Demler, Harvard University
- 11:45** Lunch, Free Discussion and Departure