

MCAW 2015
Saturday, November 14, University of Wisconsin-Madison
Chamberlin Hall, Room 2241

8:00-8:30, checking in and poster set-up

8:30-10:10, oral session 1

8:30-8:55, Bryce Gadway, University of Illinois

Prospects for studying topological matter with cold atoms at Illinois

8:55-9:20, Chen-Lung Hung, Purdue University

Building quantum matter with atoms and photons in nano-photonic crystals and cavities

9:20-9:45, Yong Chen, Purdue University

Transport and dynamics in spin-orbit coupled BEC

9:45-10:10, Logan Clark, University of Chicago (group of Cheng Chin)

Spatiotemporal control of interactions in a stable Bose-Einstein condensate

10:10-10:30, coffee break

10:30-12:10, oral session 2

10:30-10:55, Panos Giannakeas, Purdue University (group of Chris Greene)

Alkali atoms and negative ions in external fields

10:55-11:20, Chris Seck, Northwestern University (group of Brian Odom)

Recent developments in trapped molecular ion technology at Northwestern

11:20-11:45, Ian Stevenson, Purdue University (group of Dan Elliott)

Towards ultracold ro-vibrational ground state $^7\text{Li-}^{85}\text{Rb}$

11:45-12:10, Ben Lemberger, University of Wisconsin (group of Deniz Yavuz)

Large sample superradiance and fault-tolerant quantum computation

12:10-12:55, lunch break

12:55-2:25, poster session and lab tours

2:25-3:40, oral session 3

2:25-2:50, Matt Ebert, University of Wisconsin (group of Thad Walker)

Blockade manipulation of Rb ensembles

2:50-3:15, Nithiwadee Thaicharoen, University of Michigan (group of Georg Raithel)

Microscopic study of van der Waals and dipole-dipole interactions between Rydberg atoms via single-atom imaging

3:15-3:40, James Hostetter, University of Wisconsin (group of Mark Saffman)

Cooling, trapping, and Rydberg spectroscopy of Holmium atoms

3:40-4:00, coffee break

4:00-5:15, oral session 4

4:00-4:25, Michael Bishof, Argonne National Lab (group of Peter Mueller)

Improved limit on the Ra-225 electric dipole moment

4:25-4:50, Tigran Sedrakyan, University of Maryland (group of Alex Kamenev)

Statistical Transmutation in Periodically Driven Optical Lattices

4:50-5:15, Nathan Schine, University of Chicago (group of Jonathan Simon)

Synthetic Landau levels for optical photons

Poster Session

Argonne National Lab

- Improved limit on the Ra-225 electric dipole moment (Mueller)
- Weak interaction study with laser trapped He-6 atoms (Mueller)
- Laboratory for Radiokrypton dating (Mueller)

Denison University

- Towards laser cooling of trapped ions with telecom light (Olmschenk)

Miami University

- Experimental investigation of cold atom transport in optical lattices (Bali)
- Pump/probe angular dependence of Zeeman Electromagnetically Induced Transparency (Bali)

Michigan State University

- Precision noble gas magnetometry using SQUID detection in the Munich magnetically shielded room (Singh)
- The high voltage upgrade for the next Ra-225 electric dipole moment search (Singh)
- Single atom detection in cryogenic solids (Singh)

Northwestern University

- Controlled chemistry with single particle resolution in a hybrid trap (Odom)
- Toward quantum logic spectroscopy of a rotationally cold molecular ion (Odom)

Purdue University

- Photoassociation in a spin-orbit coupled BEC (Chen)
- Experimental studies of collective excitations of a BEC in light-induced gauge fields (Chen)
- Progress on a hybrid cold-atom and nanophotonic apparatus (Hung)
- Coherent forward broadening in superradiant cold atom clouds (Robicheaux)

University of Chicago

- Quantum phase transitions of ultracold bosons in a shaken optical lattice (Chin)
- Spatiotemporal control of atomic interactions in a Bose-Einstein condensate (Chin)
- Efimov resonances in an ultracold mixture of Li and Cs atoms (Chin)
- Construction of a quantum matter synthesizer (Chin)
- Thermophoretic levitation and dynamics of particles at low pressures (Chin)
- Building quantum materials from strongly correlated photons (Simon)
- Engineering strong interactions between mm-wave and optical photons (Simon)
- Towards topological quantum states of light in coupled microwave cavities (Simon)
- Synthetic Landau levels for optical photons (Simon)

University of Illinois

- Measuring double occupancies in a disordered Mott insulator (DeMarco)
- Spectroscopy of potassium Rydberg states via Electromagnetically Induced Transparency (DeMarco)
- Relaxation dynamics in the Fermi-Hubbard model (DeMarco)
- Towards studying topological matter with cold atoms in optical lattices (Gadway)

University of Michigan

- Measurement of strong electric fields using room-temperature Rydberg-EIT (Raitel)

- 532-nm intensity-modulated optical lattice for driving Rydberg-Rydberg transitions (Raithel)
- Progress towards an optical measurement of Rb core polarizability (Raithel)
- Progress towards measuring the Rydberg constant using circular Rydberg atoms in an intensity-modulated optical lattice (Raithel)

University of Wisconsin

- Rydberg blockade of atomic ensemble qubits (Saffman)
- Rydberg spectroscopy of Holmium atoms (Saffman)
- Progress towards a Rydberg atom-photon-superconductor quantum interface (Saffman)
- Characterization of single- and two-qubit gates in a 2D neutral atom qubit array (Saffman)
- Large-sample superradiance and fault tolerant quantum computation (Yavuz)
- Left-handed electromagnetic waves in rare-earth doped crystals (Yavuz)
- Broadband spectrum generation using continuous-wave molecular modulation (Yavuz)
- Atomic localization using Electromagnetically Induced Transparency (Yavuz)