Atomic Physics (GRS)
Gordon-Kenan Research Seminar

Hybrid Atomic Systems in the Quantum Regime

June 10 - 11, 2017

Chair
Boris Braverman

Salve Regina University
100 Ochre Point Avenue
Newport, RI, US

Conference Description

The Gordon Research Seminar on Atomic Physics is a unique forum for graduate students, post-docs, and other scientists with a similar level of experience and education to present, exchange, and discuss new data and cutting edge ideas. This is the inaugural GRS on Atomic Physics, and any suggestions or questions are highly encouraged.

The focus of this meeting is on recent advances in the creation and manipulation of strongly interacting hybrid quantum systems, with control and measurement at the level of single atoms and quanta. Sessions themes include ultracold atoms with strong interactions, strong coupling of atoms coupling and photons, Rydberg atoms, and quantum control of atomic motion.

Related Meeting

This GRS will be held in conjunction with the "Atomic Physics" Gordon Research Seminar (GRS). Those interested in attending both meetings must submit an application for the GRC in addition to an application for the GRS. Refer to the associated GRC program page for more information.

Conference Program

Saturday	
2:00 pm - 5:00 pm	Arrival and Check-in

3:30 pm - 3:45 pm	Introductory Comments by GRC Site Staff / Welcome from the GRS Chair
3:45 pm - 4:30 pm	**Thermalization in Quantum Systems** Discussion Leader: **Hilary Hurst** (Joint Quantum Institute, University of Maryland, USA)
3:45 pm - 4:15 pm	**Avinash Kumar** (University of Maryland, USA) "Experiments with a Toroidal Bose-Einstein Condensate"
4:15 pm - 4:30 pm	Discussion
4:30 pm - 6:00 pm	**Poster Session**
6:00 pm - 7:00 pm	Dinner
7:30 pm - 9:30 pm	**Trapped Ions and Applications** Discussion Leader: **Alexander Keesling** (Harvard University, USA)
7:30 pm - 7:50 pm	**Elena Jordan** (National Institute of Standards and Technology, USA) "Quantum Simulations Using Hundreds of Ions in a Penning Trap"
7:50 pm - 8:00 pm	Discussion
8:00 pm - 8:20 pm	**Stephen Erickson** (Ion Storage Group, National Institute of Standards and Technology, USA) "Chained Bell Inequality Experiment with High-Efficiency Measurements"
8:20 pm - 8:30 pm	Discussion
8:30 pm - 8:50 pm	**Tomas Sikorsky** (Weizmann Institute of Science, Israel) "Quantum Control of Inelastic Processes in Atom-Ion Systems"
8:50 pm - 9:00 pm	Discussion
9:00 pm - 9:20 pm	**Christa Fluhmann** (Trapped Ion Information Group, ETH Zurich, Switzerland) "Preparation of Grid State Qubits by Sequential Modular Position Measurements of Trapped Ion Motion"
9:20 pm - 9:30 pm	Discussion

Sunday	
7:30 am - 8:30 am	Breakfast
9:00 am - 11:00 am	**Rydberg Atoms and Quantum Control and Sensing of Atomic Motion** Discussion Leader: **Daniel Kienzler** (National Institute of Standards and Technology, USA)
9:00 am - 9:20 am	**Alexander Keesling** (Harvard University, USA) "Arrays of Strongly Interacting Neutral Atoms"
9:20 am - 9:30 am	Discussion
9:30 am - 9:50 am	**John Bartolotta** (University of Colorado Boulder, USA) "Narrow Linewidth Laser Cooling via Adiabatic Transfer"
9:50 am - 10:00 am	Discussion
10:00 am - 10:20 am	**Aziza Suleymanzade** (University of Chicago, USA) "Strongly Interacting mm-Wave and Optical Photons with Rydberg Atoms"
10:20 am - 10:30 am	Discussion
10:30 am - 10:50 am	**Giulio D'Amico** (Universita di Firenze, Italy) "Gravitational Measurements with Simultaneous Atom Interferometers"
10:50 am - 11:00 am	Discussion
11:00 am - 12:30 pm	**Poster Session** *Coffee will be served in the poster area from 11:00 am - 11:30 am*
12:30 pm - 1:30 pm	Lunch
1:30 pm - 2:30 pm	**Strongly Interacting Quantum Gases** Discussion Leader: **Avinash Kumar** (University of Maryland, USA)
1:30 pm - 1:50 pm	**Hilary Hurst** (Joint Quantum Institute, University of Maryland, USA) "Understanding Dissipative Dynamics of Dark Solitons: Results from Experiment and Theory"

1:50 pm - 2:00 pm	Discussion
2:00 pm - 2:20 pm	**Isabella Fritsche** (University of Innsbruck, Austria) "Phase Separation in a Fermi-Bose Mixture of 6Li and 41K"
2:20 pm - 2:30 pm	Discussion
2:30 pm - 3:00 pm	**Evaluation Period** *Fill in GRS Evaluation Forms*
3:00 pm	Seminar Concludes

Contributors