Basic Research Innovation Collaboration Center (BRICC)
4100 N Fairfax Drive, Suite 450 | Arlington, VA 22203

Agenda Day 1 | Monday, July 31, 2023

Time	Topic	Speaker
8:00	**CHECK IN / SIGN IN**	
8:15	Photon number state filters using precise positioning of quantum emitters along a waveguide	Daniel Campbell, Air Force Research Lab
8:35	Stabilizer-based Hamiltonian Engineering using Superconducting Qubits	Angela Kou, University of Illinois Urbana Champaign
8:55	Expanding scQubits: an open-source Python package for superconducting qubits	Jens Koch, Northwestern University
9:15	BE NON LINEAR: Bosonic Encodings in NOise-resilient circuits with strong Non-LINEARity	Machiel Blok, University of Rochester (YIP)
9:35	**BREAK**	
10:00	Encoding Bosonic Qubits in Long-Lived Phonons	Mohammad Mirhosseini, Caltech (YIP)
10:20	Suppressing quasiparticles in superconducting qubits	Eli Levenson-Falk, University of Southern California
10:40	Limiting phonon-induced decoherence in superconducting qubits	Zhiting Tian, Cornell University (YIP)
11:00	Long-coherence high-fidelity electron qubits on quantum solids	Dafei Jin, University of Notre Dame (Team)
11:20	Quantum Piezoacoustics	Andrew Cleland, University of Chicago
11:40	**LUNCH**	
13:00	MURI: High Coherence Quantum Phononic Circuits	Peter Rakich, Yale University
13:20	Quantum Phononics to Advance Quantum Information Processing	Konrad Lehnert, University of Colorado
13:40	Optimizing qubit performance in diamond with strain engineering	Alexander High, University of Chicago
14:00	Engineering Superconductivity in Germanium	Javad Shabani, New York University
14:20	Design and optimization of synthesizable materials with targeted quantum characteristics	Giulia Galli, University of Chicago (Team)

14:45	**BREAK**	
15:05	Single phonon quantum acoustics	Jack Harris, Yale University
15:25	Optical Quantum Networks with Single Ytterbium Ions in YVO4	Andrei Faraon, Caltech
15:45	Programmable quantum spin dynamics with trapped atoms coupled to a nanophotonic microring resonator	Chen-Lung Hung, Purdue University
16:05	Quantum interconnects for neutral atoms	Alex Kuzmich, University of Michigan
16:25	Measurement of Entangement by Quantum Interferometry	Mayukh Lahiri, Oklaholma State University
16:45	**END OF DAY**	

Agenda Day 2 | Tuesday, August 1, 2023		
Time	**Topic**	**Speaker**
8:00	**CHECK IN / SIGN IN**	
8:15	Counter-diabatic control as a universal quantum design tool	Dries Sels, New York University
8:35	Generating, Qualifying, and Quantifying Multi-Partite Entanglement for Quantum Networks	Kathy-Anne Soderberg, Air Force Research Lab
8:55	Entanglement Distribution among Six Remote Quantum Nodes through Cold Atomic Ensembles and Photon Polarizations	Shengwang Du, University of Texas Dallas
9:15	Optimizing Entanglement to attain Quantum Limit of Long-Baseline Imaging	Saikat Guha, University of Arizona
9:35	**BREAK**	
10:00	MURI: Towards Robust Scalable Quantum Random Access Memories	Liang Jiang, University of Chicago
10:20	Superconducting Reservoir Computers for Quantum Memory and Information Processing	Hakan Tureci, Princeton University
10:40	Practical Quantum Protocols	Gorjan Alagic, University of Maryland (Team)
11:00	Experimental Robustness vs. Computational Complexity in a Neutral Atom Based NISQ Information Processor	Grant Biedermann, University of Oklahoma (Team)

11:20	Parallel gate operations in 3D optical lattice arrays of Cs atoms	David Weiss, Pennsylvania State University
11:40	**LUNCH**	
13:00	Large-scale entanglement via spin-exchange in a cryogenic ytterbium tweezer array	Peter Schauss, University of Virginia
13:20	Real-time feedback for Rydberg atom arrays	Jacob Covey, University of Illinois Urbana Champaign (YIP)
13:40	Novel photonic topology from two-photon driving: applications to quantum information processing	Aash Clerk, University of Chicago
14:00	Engineering pathways to state preparation in quantum systems	Anatoli Polkovnikov, Boston University
14:20	Superradiance, lasing, and dissipative generation of entanglement in ensembles of qubits	Ana Asenjo-Garcia, Columbia University (YIP)
14:40	**BREAK**	
15:05	Measurement and control in an open many-body quantum system	Dan Stamper-Kurn, University of California Berkeley
15:25	Quantum Optimization with Rydberg Atoms	Shankari Rajagopal for Monika Schleier- Smith, Stanford University (PECASE)
15:45	Tunable quantum dissipation using parametric interactions	Archana Kamal, University of Massachusetts Lowell (YIP)
16:05	Driven-dissipative architectures: New routes to quantum phases and technologies	Mohammad Maghrebi, Michigan State University (YIP)
16:25	Emergent phenomena in non-equilibrium quantum systems	Romain Vasseur, University of Massachusetts Amherst (YIP)
16:45	**END OF DAY**	

Agenda Day 3 | Wednesday, August 2, 2023		
Time	**Topic**	**Speaker**
8:00	**CHECK IN / SIGN IN**	
8:15	Dynamical optical lattices of dysprosium	Benjamin Lev, Stanford University

8:35	Fundamental speed limits on quantum information dynamics	Andrew Lucas, University of Colorado
8:55	Creation and control of large-scale entangled quantum matter	Ana Maria Rey, University of Colorado (Team)
9:15	MURI: Dissipatively Stabilized Qubits and Materials	Jonathan Simon, Stanford University
9:35	**BREAK**	
10:00	Improving Trapped Ion Quantum Information Processing Through Parametric Amplification	John Bollinger, University of Colorado
10:20	Experimental steps towards quantum information processing with trapped electrons	Hartmut Haeffner, University of California Berkeley (Team)
10:40	Fermionic Quantum Simulation and Computation	Ningyuan Jia for Martin Zwierlein, Massachusetts Institute of Technology
11:00	Quantum Simulation of Optical Conductivity	Joseph Thywissen, University of Toronto
11:20	**LUNCH**	
12:40	Cooling and Non-Destructive Detection for Magnetically Confined Atoms	Spencer Olson, Air Force Research Lab
13:00	Cold Atoms and Photonic Resonators	Chandra Raman, Georgia Tech
13:20	Quantum Correlated Four-Wave-Mixing: Cluster States and Cavities	Paul Lett, University of Maryland
13:40	Label-Free, Super-Resolution, Chemical Imaging Using Entangled Stokes and Anti-Stokes Photons	Jacob Petrich, Iowa State
14:00	Isomer Identification at the Single-Molecule Level	James Chou, NIST for Heather Lewandowski, University of Colorado
14:20	Quantum control and precision measurement of molecular vibrational states	Scott Diddams, University of Colorado
14:40	**BREAK**	
15:05	Direct test of the quantum statistics theorem using well-separated indistinguishable particles	Hartmut Haeffner, University of California Berkeley
15:25	Solving Problems in Atomic Superfluid Rotation Using Cavity Optomechanics	Mishkatul Bhattachariya, Rochester Institute of Technology
15:45	High-precision inertial sensing using levitated optomechanics	Maxwell Gregoire, Air Force Research Lab
16:05	Cavity Tweezers for Quantum Information Science and Simulation	Jonathan Simon, Stanford University

16:25	New Frontiers of Quantum Simulation with Alkaline Earth Atoms	Ana Maria Rey, University of Colorado
16:45	**END OF DAY COMMENTS**	

Agenda Day 4 | Thursday, August 3, 2023		
Time	**Topic**	**Speaker**
8:00	**CHECK IN / SIGN IN**	
8:15	Quantum Science with Hybrid Magnetic Lanthanide Molecules for Quantum Simulations and Precision Measurements	Svetlana Kotochigova, Temple University
8:35	Innovations for the Construction and Detection of Quantum Phases with Neutral Atoms	Vito Scarola, Virginia Tech
8:55	Coherent control of multimode quantum optical signals via atom-mediated nonlinear inter-actions	Irina Novikova, College of William & Mary
9:15	Correlated atomic fluids in two-dimensional synthetic lattices	Bryce Gadway, University of Illinois
9:35	Cluster-State Computing via Non-Destructive Imaging of Single Molecules	Brian DeMarco, University of Illinois
9:55	**BREAK**	
10:15	Probing Nonlocal Pair Correlations in a Quantum Gas using Ultra-long-range Rydberg Molecules	Thomas Killian, Rice University
10:35	Exploiting Strong Driving for Next Generation Quantum Devices	Anushya Chandran, Boston University
10:55	Repulsive multipole-multipole interactions	Jianing Han, University of South Alabama
11:15	Spectroscopy in a cold rovibrational molecular rubidium beam produced by broadband optical pumping	Luis Marcassa, University of São Paulo
11:35	Optical Control of Interactions in Fermi Gas Quantum Simulators	John Thomas, North Carolina State University
11:55	**LUNCH**	
13:10	Nonlinear Acoustics in Ultracold Fermi Fluids	Nir Navon, Yale University

13:30	Probing the influence of anisotropic and disordered interactions on the dynamics of quantum information in a Rydberg tweezer array	Robert Lewis-Swan, University of Oklahoma
13:50	Cooperative radiation phenomena for Quantum information processing and metrology	Susanne Yelin, Harvard University
14:10	Subwavelength-spaced atomic arrays as novel light-matter interfaces	Qiyu Liang, Purdue University
14:30	Entanglement control in alkaline-earth Rydberg arrays	Joonhee Choi for Manuel Endres, Caltech (YIP)
14:50	**BREAK**	
15:10	New quantum states in synthetic curved spaces and non-orientable manifolds	Qi Zhou, Purdue University
15:30	Exploring Ultra-Narrow Photon Emission in the keV regime	Giorgio Gratta, Stanford University
15:50	Exploring Many-body Quantum Chemistry with Molecular Bose-Einstein Condensates	Cheng Chin, University of Chicago
16:10	Coherent Control of Cold and Ultracold Bimolecular Reactions	Paul Brumer, University of Toronto
16:30	MURI: Ensembles of Molecules in Controlled Quantum States for Quantum Simulations, Ultracold Reactions, and Precision Metrology	John Doyle, Harvard for Tanya Zelevinsky, Columbia University
16:50	**END OF DAY**	

Agenda Day 5 | Friday, August 4, 2023		
Time	**Topic**	**Speaker**
8:00	**CHECK IN / SIGN IN**	
8:15	Thermal transport in ultracold topological quantum matter	Richard Fletcher, Massachusetts Institute of Technology (YIP)
8:35	New frontiers for quantum dynamics	Rahul Nandkishore, University of Colorado
8:55	Engineering many-body quantum states and dissipative dynamics in quantum simulators	Andrew Daley, University of Strathclyde
9:15	TDB	TDB

9:35	**BREAK**	
10:00	Emulating Twistronics and Beyond with Ultra-Cold Atoms	Jedediah Pixley, Rutgers University (YIP)
10:20	Engineering Spin Interactions in Circuit QED Lattices	Alicia Kollar, University of Maryland (YIP)
10:40	Spin susceptibility, spin exchange reactions, and Kondo effect with ultracold mixtures	Colin Parker, Georgia Tech
11:00	Many-body Dynamics of Quantum Gases in Time Varying Optical Lattices	Subhadeep Gupta, University of Washington
11:20	MURI: Reimagining Atoms and Photons in SYnthetic, DYnamical, and INteracting Quantum matter (RAPSYDY IN Q)	Mikael Rechtsman, Pennsylvania State University
11:40	**LUNCH**	
13:00	Quantum Simulation, Computation, and Metrology with Ultracold Atoms	Chuanwei Zhang, University of Texas Dallas
13:20	Theoretical Investigations of Ionization Processes in an Ultracold Quantum Rydberg Gas	Essaid Zerrad, Delaware State University
13:40	Strongly driven ultracold atoms: new frontiers in nonequilibrium quantum control	David Weld, University of California Santa Barbara
14:00	Orbital Quantum Phases of Ultracold Atoms	Vincent Liu, University of Pittsburgh
14:20	Laser Cooling and Trapping of Asymmetric Top Molecules for Quantum Science	John Doyle, Harvard University
14:40	**BREAK**	
15:05	Controlled Organic Chemistry with Laser-Cooled CH Molecules	Daniel McCarron, University of Connecticut
15:25	Stability of ultracold polyatomic molecules	Jesus Perez Rios, Stony Brook University
15:45	Entangling ultracold molecules	Kang-Kuen Ni, Harvard University
16:05	MURI: New approaches to quantum control with individual molecule sensitivity	Kang-Kuen Ni, Harvard University
16:25	**END OF DAY**	