GiRyd Status Workshop, 05 – 07 May 2021

Programme

Online meeting platform: ZOOM

Login details have been distributed via email to all participants. If you did not receive them please contact the workshop organizers via email.

All information as of 04.05.2021

Wednesday, 5 May 2021

10:45 AM – 11:15 AM	Arrival of all participants in the online conference room Participants can familiarize themselves with layout, tools, etc.
11:15 AM – 11:30 AM	Tilman Pfau**:** Welcome and Workshop Opening
Session Chair: Tilman Pfau	
11:30 AM	• Hecker Denschlag: Towards charged Rydberg molecules • Michael Peper: Heteronuclear long-range Rydberg molecules • Simon Hollerith: Probing the toolbox of Rydberg macrodimers to study correlated phenomena
12:30 PM	Break
Session Chair: Herwig Ott	
1:30 PM	• Simon Ohler: Emerging gauge fields in arrays of Rydberg atoms • Richard Schmidt: Polaron formation in Rydberg systems and Rydberg excitations as a probe of correlated quantum matter • Nicolas Zuber: A pulsed ion microscope to probe quantum gases • Lee Drori: Quantum non-linear optics with multi-level Rydberg polaritons
3:00 PM	Break
Session Chair: Christian Groß	
3:30 PM	• Herwig Ott: State Changing Collisions between Rydberg Atoms and Ground State Atoms • Annika Tebben: Nonlinear absorption in interacting Rydberg EIT spectra on two-photon resonance • Rivka Bekenstein: Quantum metasurfaces with atom arrays
5:00 PM	Break
5:30 PM	Digital poster session Room 1 • S. Patsch: Multipolar character of Förster resonance energy transfer • D. Dorer: Towards a digital ion trap for Rydberg atom-ion experiments in a hybrid setup • A. Eisfeld: Interacting Rydberg atoms interfaced • M. Magoni: Emergent Bloch oscillations in a kinetically constrained Rydberg spin lattice • T. Schreiber: Coherent spin dynamics in two-dimensional arrays of individual atoms • R. Eberhard: Motion assisted facilitated excitation of Rydberg atoms in optical tweezers • B. Panda: Time Resolved Pump-Probe Measurements in Cu_2O • J. Ertl: Semiclassical analysis of Rydberg exciton spectra in cuprous Oxide • A. Neubauer: Towards enhancing quadrupole transitions in cuprous oxide excitons using plasmonic nanoantennas • S. Geier: Floquet Hamiltonian Engineering of Rydberg-Spin Hamiltonia

	Room 2 • S. Notarnicola: Tensor networks for quantum simulation Benchmarking • F. Hummel: Conical Intersections and Quantum Dynamics of Ultra-long-range Rydberg Molecules • M. Trautmann: Creating a gas of ultracold ion pairs out of long-range Rydberg molecules • K. Srakaew: Probing the toolbox of Rydberg Macrodimer • V. Anasuri: A pulsed ion microscope to probe quantum gases • M. Althön: Improving a reaction microscope for Rydberg systems • T. Stolz: An apparatus for cavity Rydberg EIT • F. Christaller: On-demand single-photon source based on thermal Rubidium • K. Kleinbeck: Optimal Photon Absorption using cascaded Rydberg Superatoms • C. Glaser: Coupling Rydberg atoms and superconducting coplanar Resonators

Thursday, 06 May 2021

9:00 – 9:30 AM	Arrival of all participants in the online conference room
Session Chair: Marc Aßmann	
9:30 AM	• Annika Neubauer: Towards enhancing quadrupole transitions in cuprous oxide excitons using plasmonic nanoantennas • Patric Rommel and Jan Ertl: Quantum and semiclassical Rydberg excitons in cuprous oxide • Julian Heckötter: Asymmetric Rydberg blockade of Rydberg excitons
10:30 AM Break	
Session Chair: Shannon Whitlock	
11:00 AM	• Martin Zeppenfeld: A new setup for investigation of cold molecule Rydberg atom interactions • Sabrina Patsch: Multipolar character of Förster resonance energy transfer • Michael Buchhold: Dynamical Stabilization of Self-Organized Criticality in a Driven Rydberg Gas • Christian Groß and Igor Lesanovsky: Facilitation processes in Rydberg gases
12:30 PM	Break
1:30 PM	Tilman Pfau: GiRyd Coordination Session
Session Chair: Robert Löw	
2:00 PM	• Alexander Eisfeld: TBC • Daniel Häupl: Rydberg atoms in hollow-core fibres • Hadiseh Alaeian: Dipolar interaction at lower dimensions
3:00 PM	Break

Session Chair: Gerhard Birkl	
3:30 PM	• Jonas Vogel: Trapped Rydberg ions: Lineshapes in presence of controlled ionic motion • Simone Notarnicola: Tensor networks for quantum simulation benchmarking • Tobias Schreiber: Assembled arrays of Rydberg-interacting atoms • Manuel Endres: Controlling individual alkaline earth Rydberg atoms
5:15 PM	Break
5:30 PM	Optional: Digital lab tours – 1st run Offered Tours: • N. Zuber & M. Berngruber (Stuttgart): Ionmicroscope • R. Rothgaenger (Bonn): New Rydberg labs in Bonn • D. Häupl (FAU & MPL Erlangen) • S. Hollerith & K. Srakaew: MPQ Single Atoms Lab

Friday, 07 May 2021

9:00 – 9:30 AM	Arrival of all participants in the online conference room
Session Chair: Sebastian Hofferberth	
9:30 AM	• Stephan Dürr: Experiments with cavity Rydberg EIT • Manuel Kaiser: Rydberg atoms in a superconducting coplanar waveguide microwave cavity • Jan Kumlin: Quantum Optics with Rydberg Superatoms
10:30 AM Break	
Session Chair: Johannes Deiglmayr	
11:00 AM	• Peter Schmelcher: Ultralong-Range Molecules: From Synthetic Dimensions to Quantum Dynamics • Mathieu Barbier: Extended Bose-Hubbard models with Rydberg macrodimer dressing • Rebecca Kraus: TBC
12:00 PM	Break
1:00 PM	Optional: Digital lab tours – 2nd run Offered Tours: • N. Zuber & M. Berngruber (Stuttgart): Ionmicroscope • M. Zeppenfeld (MPQ): The cold molecules Rydberg atom HybRYD experiment • R. Rothgaenger (Bonn): New Rydberg labs in Bonn • D. Häupl (FAU & MPL Erlangen) • S. Hollerith & K. Srakaew: MPQ Single Atoms Lab