



GiRyd Status Workshop, 22 – 25 March 2022

Programme

Hosted by:

Johannes Gutenberg University Mainz



**JOHANNES GUTENBERG
UNIVERSITÄT MAINZ**

Conference Venue:

Room „Atrium Maximum“

Building “Alte Mensa”

Johann-Joachim-Becher-Weg 5, 55128 Mainz

All information as of 21 March 2022

Invited talks:	30 min. talk + 15 min discussion.
GiRyd status talks:	15 min. talk + 5 min. discussion
Quantum Computing talks:	15 min. talk + 5 min discussion

Tuesday, 22 March 2022

12:30 PM – 1:00 PM	Registration and check-in (please be prepared to show proof of vaccination / recovery / negative Covid-19 Test)
1:00 PM – 1:15 PM	Schmidt-Kaler and Pfau: Welcome and Workshop Opening
Session Chair: Ferdinand Schmidt-Kaler	
1:15 PM	<ul style="list-style-type: none"> • Kondov: A quantum computing architecture based on strontium-87 • Whitlock: Atomic quantum computing as a service • Weber: QRydDemo - Quantum Computing with Rydberg Atoms • Blatt: MUNIQC-ATOMS Consortium
3:15 PM	Coffee Break
Session Chair: Peter Schmelcher	
3:45 PM	<ul style="list-style-type: none"> • Groß: A cryogenic Rydberg quantum processor • Zeiher: SNAQC - Cavity-enabled fast readout of atomic states in a Rydberg array • Meinert: CiRQus - A Circular Rydberg Atom Quantum Simulator • Birkl: Darmstadt Neutral Atom Quantum Technology Platform (DaNaQTP) • Niederprüm: Rymax-One Quantum Optimizer • Schmidt-Kaler: Scalable QC with trapped ions
6:00 PM	Poster session 1 and Finger Food For distribution of poster submissions between our 2 poster sessions see page 5.

Wednesday, 23 March 2022

8:30 AM – 9:00 AM	Registration and check-in (please be prepared to show proof of vaccination / recovery / negative Covid-19 Test)
Session Chair: Igor Lesanovsky	
9:00 AM	<ul style="list-style-type: none"> • Ahn: Rydberg atoms for quantum simulation and computation • Kaiser: Coupling Rydberg atoms and superconducting coplanar resonators • Srakaew: Switching a monolayer atomic mirror using a single Rydberg atom
10:30 AM	Coffee Break

Session Chair: Herwig Ott	
11:00 AM	<ul style="list-style-type: none"> • Stolz: A quantum-logic gate between two optical photons with an average efficiency above 40% • Kleinbeck: Creation of non-classical states of light from Rydberg superatom arrays • Mäusezahl: On-demand single-photon source based on a strongly interacting gas • Rommel and Ertl: Quantum and semiclassical excitons in cuprous oxide
12:30 PM	Lunch Break at Zentralmensa (Staudingerweg 21)
Session Chair: Shannon Whitlock	
2:00 PM	<ul style="list-style-type: none"> • De Léséleuc: Ultrafast energy exchange between two single Rydberg atoms on the nanosecond timescale • Lesanowsky: Non-equilibrium phase transitions in facilitated Rydberg gases • Schmidt: Exploring many-body physics with Rydberg excitations
3:30 PM	Coffee Break
Session Chair: Tilman Pfau	
4:00 PM	<ul style="list-style-type: none"> • Fleischhauer: Chiral spin liquid of Rydberg excitations induced by density-dependent Peierls phases • Salzinger: Engineered Interactions and Dissipation in Rydberg Systems
4:45 PM	Pfau: GiRyd Coordination Session
6:00 PM	<p>Poster Session 2 and Finger Food</p> <p>For distribution of poster submissions between our 2 poster sessions see page 5.</p>

Thursday, 24 March 2022

Session Chair: Gerhard Birkel	
9:00 AM	<ul style="list-style-type: none"> • Sadeghpour: Oh, NONO* molecule! • Whitlock: Complex systems dynamics with Rydberg atoms • Heckötter: Rydberg Exciton - Impurity interaction • Morawetz: Towards Rydberg excitons in quantum wells
10:30 AM	Coffee Break
Session Chair: Hendrik Weimer	
11:00 AM	<ul style="list-style-type: none"> • Browaeys: Quantum simulation with Rydberg atoms in resonant interaction • Schäffner: Rydberg Interactions of Assembled Atom Configurations in a Scalable Multi-layer Platform • Trautmann: Designing beyond-Ising spin interactions in Rydberg tweezer arrays
12:30 PM	Lunch Break at Zentralmensa (Staudingerweg 21)

Session Chair: Stephan Dürr		
2:00 PM	<ul style="list-style-type: none"> • Semeghini: Topological quantum phases in Rydberg atom arrays: from quantum simulation to applications in quantum information processing • Weimer: Simulating driven-dissipative Rydberg systems • Vogel: Multi-level Autler-Townes spectroscopy with trapped Rydberg ions 	
3:30 PM	Please select one of the following two options:	
	<table border="1"> <tr> <td>Walk to the city center of Mainz to visit St. Stephan's church (Kleine Weißgasse 12, 55116 Mainz) and its unique stained glass windows designed by Marc Chagall</td> <td>Lab Tours</td> </tr> </table>	Walk to the city center of Mainz to visit St. Stephan's church (Kleine Weißgasse 12, 55116 Mainz) and its unique stained glass windows designed by Marc Chagall
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6:00 PM	Dinner at "Eisgrub Bräu" (Weißliliegasse 1A, 55116 Mainz) Networking and discussion of joint research activities	

Friday, 25 March 2022

Session Chair: Stefan Scheel	
9:00 AM	<ul style="list-style-type: none"> • Althön: The Quest for Ultracold Heavy Rydberg Systems • Hummel: Ultracold heavy Rydberg system from ultra-long-range molecules • Haze: Towards creation of charged-Rydberg molecules in an atom-ion hybrid trap • Berngruber: Ion-Rydberg interactions observed by a high-resolution ion microscope
10:30 AM Coffee Break	
Session Chair: Hans Peter Büchler (tbc)	
11:00 AM	<ul style="list-style-type: none"> • Deiglmayr: Towards the formation of ion-pair states via long-range Rydberg molecules • Zeppenfeld: Nondestructive detection of polar molecules via Rydberg atoms • Patsch: Rydberg spectroscopy of polar molecules via Förster resonance energy transfer • Drori: Quantum nonlinear dynamics of strongly interacting photons
12:30 PM	Lunch Break at Zentralmensa (Staudingerweg 21)
14:00 PM	Lab Tours

Poster Sessions:

Due to capacity constraints, poster submissions are split in two:

Poster session 1: Tuesday, 22 March 2022

1. Anasuri, Viraatt
2. Braun, Eduard Jürgen
3. Brady, Daniel
4. Deiß, Markus
5. Eiles, Matthew
6. Glaser, Conny
7. Hegels, Hendrick
8. Hsiao, Ya-Fen
9. Meinert, Florian
10. Müllenbach, Maximilian
11. Notarnicola, Simone
12. Osterholz, Philip
13. Pagano, Alice
14. Pupillo, Guido
15. Schlosser, Malte
16. Schulze-Makuch, Alexander

Poster session 2: Wednesday, 23 March 2022

1. Althön, Max
2. Bosworth, Daniel
3. Ertl, Jan
4. Hollerith, Jan
5. Kazemi, Javad
6. Luger, Lorenz
7. Magoni, Matteo
8. Mink, Christopher
9. Panda, Binodbihari
10. Rommel, Patric
11. Salzinger, Andre
12. Schäffner, Dominik
13. Srakaew, Kritsana
14. Srikumar, Rohan
15. Trautmann, Martin
16. Wagner, Marcel
17. Zeppenfeld, Martin