



GiRyd Status Workshop, 27 February – 03 March 2023

Programme

Hosted by:

Eberhard Karls Universität Tübingen

EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN



Workshop Venues:

PhD Networking Session (Monday):

Room N4, Hörsaalzentrum Morgenstelle, Auf der Morgenstelle 16, 72076 Tübingen

Main Workshop (Tuesday 9 AM – Thursday 12 PM):

Alte Aula, Münzgasse 30, 72070 Tübingen, Germany

Pair Interaction Satellite Workshop (Thursday 2:00 PM – Friday 3:00 PM):

Room N4, Hörsaalzentrum Morgenstelle, Auf der Morgenstelle 16, 72076 Tübingen

All information as of 23 February 2023

Invited talks:

30 min. talk + 15 min discussion

GiRyd status talks:

15 min. talk + 5 min. discussion

Monday, 27 February 2023

1:00 PM	<p>PhD Networking Session for PhD candidates/students followed by pubcrawl</p> <ul style="list-style-type: none"> • Introduction • Discussion on techniques and challenges 1: Edward Braun (Uni Heidelberg) and Xintong Su (Uni Tübingen) • Invited speaker: Valentin Walther (Purdue University): Perspectives for Rydberg excitons in quantum (information) science • Discussion on techniques and challenges 2: Chris Nill (Uni Tübingen) and Yeelai Chew (NINS Japan)
---------	---

Tuesday, 28 February 2023

8:30 AM – 9:00 AM	Registration and check-in
Session Chair: Christian Groß	
9:00 AM	<p>Welcome and Workshop Opening</p> <ul style="list-style-type: none"> • Hannes Bernien: Error mitigation and interactions in a dual-species atom array • Dominik Schäffer: Microlens-based tweezer arrays for Rydberg-interacting atoms • Pascal Weckesser: Stroboscopic Rydberg dressing in a Bose-Hubbard ladder
10:30 AM	Coffee Break
Session Chair: Johannes Zeiher	
11:00 AM	<ul style="list-style-type: none"> • Hannah Williams: Diatomic molecules for quantum science *with added Rydbergs • Arno Trautmann: Playing with s and p Rydberg states: Facilitation dynamics in tweezer arrays. • Matteo Magoni: Coupled spin-phonon dynamics in Rydberg tweezer arrays
12:30 PM	Lunch Break at Mensa & Cafeteria Prinz Karl, Hafengasse 6
Session Chair: Richard Schmidt	
2:00 PM	<ul style="list-style-type: none"> • Hannes Busche: Waveguide QED with cascaded Rydberg superatoms • Kevin Kleinbeck: Creation of non-classical states of light in a chiral waveguide • Stephan Dürr: Schrödinger-Cat States of Optical Photons • Christiane Koch: Rydberg atom-enabled spectroscopy of polar molecules via Förster resonance energy transfer
3:30 PM	Coffee Break

Session Chair: Hendrik Weimer	
4:00 PM	<ul style="list-style-type: none"> • Felix Mounstilis: On-demand single-photon source based on a strongly interacting gas • Daniel Häupl: Towards Rydberg physics in newly developed all-glass cells • Gerhard Zuern: Does an isolated disordered quantum spin system thermalize? • Marcel Wagner: Rydberg Excitations as Probe of Quantum Matter
6:00 PM	<p>Poster Session and Finger Food</p> <p>Poster Contributions by: Abraham, Neethu Anasuri, Viraatt Sai Vishwakarma Blättner, Richard Braun, Eduard Jürgen Busche, Hannes Chew, Yeelai Cieslik, Jonas Bosworth, Daniel Das, Bankim Chandra Durst, Aileen Egenlauf, Patrick Franco, Roberto Gievers, Marcel Glaser, Conny Götzelmann, Aaron Hegels, Hendrik Hornung, Moritz Ilzhöfer, Philipp Kübler, Harald Main, Jörg Meinert, Florian Mink, Christopher Mischke, Patrick Morawetz, Florian Mukherjee, Rick Munkes, Fabian Pagano, Alice Panda, Binodbihari Schäffner, Dominik Schmale, Tobias Schulze-Makuch, Alexander Srakaew, Kritsana Srikumar, Rohan Steinert, Lea-Marina Trautmann, Martin Wang, Yimeng Weber, Sebastian Wojciechowska, Agata Zeybek, Zeki</p>

Wednesday, 01 March 2023

Session Chair: Igor Lesanovsky	
9:00 AM	<ul style="list-style-type: none"> • Tilman Pfau: GiRyd Coordination Session
10:00 AM	<ul style="list-style-type: none"> • Manuel Kaiser: Coupling Rydberg atoms to a superconducting coplanar waveguide resonator • Han Bao: Entangling scheme for Rydberg ion crystals using electric kicks in radial direction
10:30 AM	Coffee Break
Session Chair: Christiane Koch	
11:00 AM	<ul style="list-style-type: none"> • Hannes Pichler: tbc • Michael Buchhold: Measurement-Induced Phase Transitions: Phenomenology, Effective Theory and Strategies to Reveal Them • Hendrik Weimer: Driven-dissipative Rydberg blockade in optical lattices
12:30 PM	Lunch Break at Mensa & Cafeteria Prinz Karl, Hafengasse 6
Session Chair: Peter Schmelcher	
2:00 PM	<ul style="list-style-type: none"> • Julian Heckötter: Rydberg excitons and charged ions in cuprous oxide • Florian Morawetz: Many-body simulation of Rydberg exciton interaction • Jan Ertl: Semiclassical approaches to Rydberg excitons in cuprous oxide
3:30 PM	Lab tours Morgenstelle / Free time to explore Tübingen
6:30 PM	Networking and discussion of joint research activities with warm finger food at "Alte Aula"

Thursday, 02 March 2023

Session Chair: József Fortágh			
9:00 AM	<ul style="list-style-type: none"> • Daniel Brady: Self-Organized Criticality and Griffith's Effects • Martin Trautmann: Formation of ion-pair states via longrange Rydberg molecules: status update • Markus Deiß: A hollow core optical fibre for transmission of UV light • Markus Exner: Three-Photon Photoassociation of Rydberg Trilobite Molecules 		
10:30 AM	Coffee Break		
Session Chair: Herwig Ott			
11:00 AM	<ul style="list-style-type: none"> • Peter Schmelcher: Vibronic coupling effects in ultralong-range molecules • Moritz Berngruber: Observation of vibrational dynamics in an ion-Rydberg molecule by a high-resolution ion microscope <p>Closing Remarks and Farewell</p>		
12:00 PM	Optional lunch break: Mensa & Cafeteria Prinz Karl, Hafengasse 6		
	<table border="1"> <tr> <td>Departure</td> <td>Satellite Workshop "Rydberg Pair Interaction"</td> </tr> </table>	Departure	Satellite Workshop "Rydberg Pair Interaction"
Departure	Satellite Workshop "Rydberg Pair Interaction"		

Optional Satellite Workshop: Rydberg Pair Interaction

Thursday, 02 March 2023

Session Chair: Sebastian Weber	
2:00 PM	Welcome and Opening of the Satellite Workshop <ul style="list-style-type: none">• Sylvain de Léséleuc: Rydberg Interaction Calculators: The Experimentalists Guides to the Rydberg Galaxy• Simon Hollerith: Precision benchmarking Rydberg interactions via marodimer spectroscopy
3:30 PM	Coffee Break
Session Chair: tbc	
4:00 PM	<ul style="list-style-type: none">• Jonathan Bass: Rydberg atom interactions in blue detuned optical potentials• Henri Menke, Sebastian Weber: Tutorial on efficient calculation of Rydberg pair interactions
5:00 PM	Discussion between users and developers

Friday, 03 March 2023

Session Chair: Sebastian Hofferberth	
9:00 AM	<ul style="list-style-type: none">• Mark Saffman: Controlling Rydberg interactions on the road to entanglement• Robert Potvliege: Two-electron pair-interaction software at Durham
10:30 AM	Coffee Break
11:00 AM	Plenum Discussion
12:30 PM	Lunch Break at Mensa Morgenstelle, Auf der Morgenstelle 26
2:00 PM	Optional Coding Session