



**GiRyd Status Workshop, March 23-25, 2020**

## **Program**

**Hosted online in cooperation with QUANTUM**



JOHANNES GUTENBERG  
UNIVERSITÄT MAINZ

**Online meeting platform: ZOOM**

**Conference room opening hours:**

Monday, 11:00 AM – 22:00 PM

Tuesday, 8:30 AM – 22:00 PM

Wednesday, 8:30 AM – 22:00 PM

## Monday, March 23, 2020

11:00 AM – 1:30 PM	Arrival of all participants in the online conference room Participants can familiarize themselves with layout, tools, etc.
1:30 PM	Tilman Pfau: Welcome and Workshop Opening
Session Chair: Tilman Pfau	
1:45 PM	<ul style="list-style-type: none"> <li>• <b>Invited Speaker: Rosario González-Férez “Triatomic ultralong range Rydberg molecules”</b></li> <li>• Hollerith: “Characterizing molecular quantum states with quantum gas microscopy”</li> <li>• Deiglmayr: “Heavy-Rydberg molecules and precision spectroscopy of potassium”</li> </ul>
3:15 PM Break	
Session Chair: Christian Gross	
3:45 PM	<ul style="list-style-type: none"> <li>• Steinert &amp; Lesanovsky: “Rydberg Dressing in Microtraps - Status and Outlook”</li> <li>• Zeier: “Optimization of control pulses for Rydberg atoms”</li> </ul>
4:30 PM	<b>Online Poster Flash Session I:</b> <ul style="list-style-type: none"> <li>• Andrijauskas: “Precise determination of ionization potential from Rydberg-series of a single trapped <math>40\text{Ca}^+</math> ion”</li> <li>• Drori: “Rapid, low-optical-power, high-contrast Rydberg spectroscopy in a magneto-optical trap”</li> <li>• Ertl: “Semiclassical Approaches to Excitons in Cuprous Oxide”</li> <li>• Fey: “Exciton-electron scattering in atomically thin semiconductors”</li> <li>• Haze: “Rydberg spectroscopy in an atom-ion hybrid trap: towards creation of charged long-range Rydberg molecules”</li> <li>• Krüger: “Interaction of charged impurities and Rydberg excitons in cuprous oxide”</li> <li>• Veit: “An ion microscope to study Rydberg physics and ultracold ions”</li> </ul>

## Tuesday, March 24, 2020

8:30 – 9:00 AM	Arrival of all participants in the online conference room
Session Chair: Tilman Pfau	
9:00 AM	<ul style="list-style-type: none"> <li>• <b>Invited Speaker: Michael Doser “(Anti)(Rydberg) atoms at the Antiproton Decelerator at CERN”</b></li> <li>• Whitlock: “Self-organization and universal dynamics with Rydberg atoms”</li> <li>• Deiß: „Exploring Rydberg physics in a combined atom-ion trap“</li> </ul>
10:30 AM Break	
Session Chair: Patrick Windpassinger	
11:00 AM	<ul style="list-style-type: none"> <li>• Ott: “A reaction microscope for few-body Rydberg physics”</li> <li>• Meinert: “Probing negative ions w/ Rydberg spectroscopy”</li> <li>• Schmidt: “Rydberg Impurities in a Fermi sea”</li> </ul>
12:00 PM Lunch Break	

Session Chair: Stephan Dürr	
1:30 PM	<ul style="list-style-type: none"> <li>• <b>Invited Speaker: Hossein Sadeghpour “Simulating indirect spin-spin interactions with Rydberg atoms”</b></li> <li>• Mokhberi: “Trapped Rydberg ions: single-ion spectroscopy, multi-ion interactions”</li> <li>• Fleischhauer: „Implementation of lattice gauge theories using arrays of Rydberg atoms“</li> <li>• Kraus: “Superfluid phases induced by the dipolar interactions”</li> </ul>
3:15 PM Break	
Session Chair: Tilman Pfau	
3:45 PM	Tilman Pfau: GiRyd Coordination – <b>Report by SPP Coordinator, Funding opportunities</b> for GiRyd members and associates
4:15 PM	<b>Online Poster Flash Session II</b> <ul style="list-style-type: none"> <li>• Noaman: “Towards Non-linear quantum optics with ultracold Yb”</li> <li>• Tebben: “Interacting Stationary Light Polaritons in a Rydberg EIT Medium”</li> <li>• Tiwari: “Tracking Rydberg atoms with Bose-Einstein Condensate”</li> <li>• Vogel: “Trapped Rydberg ions exposed to fast electric field ramps”</li> <li>• Wagner: “Rydberg Excitations as a Probe of Quantum Matter”</li> </ul>

### Wednesday, March 25, 2020

8:30 – 9:00 AM	Arrival of all participants in the online conference room
Session Chair: Richard Schmidt	
9:00 AM	<ul style="list-style-type: none"> <li>• Scheel: “Rydberg excitons in external fields”</li> <li>• Rommel: “Second harmonic generation and exciton resonances in cuprous oxide”</li> <li>• Giessen: “Breaking dipolar selection rules with Rydberg excitons in Cu<sub>2</sub>O”</li> </ul>
10:00 AM Break	
Session Chair: Tilman Pfau	
10:30 AM	<ul style="list-style-type: none"> <li>• Eiles: “Pandora’s little box of Rydberg Molecules”</li> <li>• Dürr: “Dephasing in Rydberg EIT”</li> <li>• Hofferberth: “Photons interacting with Rydberg superatoms”</li> </ul>
11:30 PM	End of workshop