

# Program

**Monday, 21 September 2020**

12:00            Opening  
                  technical check

13:45 – 13:50    Tilman Pfau  
                  Christophe Salomon

**Welcome**

13:50 – 14:00    Stefan Jorda

**About the Wilhelm and Else Heraeus  
Foundation**

**Chair: Tilman Pfau**

14:00 – 14:45    Helmut Ritsch

**Quantum Simulation in Quantum  
Gas Cavity QED**

14:45 – 15:30    Mikhail D. Lukin

**Programmable quantum systems  
based on Rydberg atom arrays**

15:30 – 16:00    *BREAK*

**Chair: Christophe Salomon**

16:00 – 16:45    Charles S. Adams

**Dipolar quantum optics**

16:45 – 17:30    Thierry Lahaye

**Quantum simulation using arrays of  
single Rydberg atoms**

# Program

**Tuesday, 22 September 2020**

**Chair: Charles S. Adams**

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|---------------|----------------------|---|
| 09:00 – 09:45 | Lauriane Chomaz      | Probing supersolids of highly magnetic atoms                                |
| 09:45 – 10:30 | Bruno Laburthe-Tolra | Quantum thermalization of an array of spins coupled by dipolar interactions |
| 10:30 – 11:00 | <i>BREAK</i>         |   |
| 11:00 – 11:45 | Tim Langen           | Observing the supersolid state of matter using ultracold magnetic atoms     |
| 11:45 – 12:30 | Sylvain Nascimbene   | Synthetic quantum Hall system with ultracold Dysprosium atoms               |
| 12:30 – 14:00 | <i>BREAK</i>         |   |

**Chair: Bruno Laburthe-Tolra**

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|---------------|------------------------|--|
| 14:00 – 14:30 | Quentin Glorieux       | Superfluidity of light in hot atomic vapours   |
| 14:30 – 15:00 | Malte Schlosser        | Assembled arrays of Rydberg-interacting atoms  |
| 15:00 – 15:30 | Johannes Schachenmayer | Localization properties of dark eigenstates under strong light-matter coupling                         |
| 15:30 – 16:00 | <i>BREAK</i>           |  |
| 16:00 – 16:45 | Arno Rauschenbeutel    | Correlating photons using the collective nonlinear response of atoms weakly coupled to an optical mode |
| 16:45 – 17:30 | Julien Laurat          | Quantum Optics with Nanoscale Waveguides and Cold Atoms  |

# Program

Wednesday, 23 September 2020

## Chair: Christian Gross

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|---------------|-----------------------|--|
| 09:00 – 09:45 | Corinna Kollath       | Quantum gases in optical cavities  |
| 09:45 – 10:30 | Jean-Philippe Brantut | Cavity quantum-electrodynamics with atoms and pairs in a strongly interacting Fermi gas    |
| 10:30 – 11:00 | <i>BREAK</i>          |  |
| 11:00 – 11:45 | Fabrice Gerbier       | Anomalous momentum diffusion of strongly interacting bosons in optical lattices            |
| 11:45 – 12:30 | Tobias Donner         | Dissipation-induced dynamics of a quantum gas with cavity-mediated long-range interactions |
| 12:30         | <i>BREAK</i>          |  |

## Chair: Christophe Salomon

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|---------------|------------------|--|
| 14:00 – 14:30 | Arezoo Mokhberi  | Trapped Rydberg ions for quantum computing and simulation          |
| 14:30 – 15:00 | Ofer Firstenberg | Magnetic phase transition and critical dynamics in alkali vapor    |
| 15:00 – 15:30 | Hadiseh Alaeian  | Limit Cycle Phase and Goldstone Mode in Driven Dissipative Systems |
| 15:30 – 15:40 | <i>BREAK</i>     |  |

## Chair: Tilman Pfau

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|---------------|--|--|
| 15:40 – 17:40 | Poster Session and Flash talks<br>(7 minutes flash talks, incl. max. 4 slides) |  |
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# Program

Thursday, 24 September 2020

## Chair: Arno Rauschenbeutel

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|---------------|---------------------|--|
| 09:00 – 09:45 | Martin Weitz        | <b>Thermally Condensing Photons into a Coherently Split State of Light</b> |
| 09:45 – 10:30 | Sylvain Ravets      | <b>Polariton quantum fluids in synthetic lattices</b>                      |
| 10:30 – 11:00 | <i>COFFEE BREAK</i> |  |
| 11:00 – 11:45 | Alessio Recati      | <b>Rotating a supersolid dipolar Bose gas</b>                              |
| 11:45 – 12:30 | Giovanni Modugno    | <b>Symmetry breaking and superfluidity in a dipolar supersolid</b>         |
| 12:30 – 14:00 | <i>BREAK</i>        |  |

## Chair: Hans Peter Büchler

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|---------------|-----------------------|--|
| 14:00 – 14:45 | Christian Gross       | <b>Collective Rydberg excitation in microtraps</b>               |
| 14:45 – 15:30 | Shannon Whitlock      | <b>Complex systems dynamics with ultracold Rydberg atoms</b>     |
| 15:30 – 16:00 | <i>BREAK</i>          |  |
| 16:00 – 16:45 | Sebastian Hofferberth | <b>Collective dynamics of a Rydberg superatom</b>                |
| 16:45 – 17:30 | Giovanna Morigi       | <b>Emergent topological order due to long-range interactions</b> |

# Program

Friday, 25 September 2020

**Chair: Jean-Philippe Brantut**

09:00 – 09:45	Hans Peter Büchler	<b>Quantum simulations of topological states of matter using dipolar interactions in Rydberg atoms</b>
09:45 – 10:30	Michel Brune	<b>Circular Rydberg atoms for quantum simulation</b>
10:30 – 11:00	<i>BREAK</i>	
11:00 – 11:45	Olivier Dulieu	<b>Optical shielding of destructive chemical reactions between ultracold ground-state NaRb molecules</b>
11:45 – 12:30	William Guerin	<b>Super- and subradiance in dilute atomic samples</b>
12:30 – 12:45	Tilman Pfau Christophe Salomon	<b>Closing remarks</b>

**End of the seminar**