



A crucial ingredient for realizing various phases of matter is the availability of interactions with different range and strength. Atoms excited to Rydberg states exhibit long-range, switchable, interactions that are many orders of magnitude stronger than the typically short-range interactions between ground-state neutral atoms. In addition, relaxation and dissipation can be introduced in this system in a controlled way. Such systems are thus uniquely suited to simulate and study coherent and dissipative quantum dynamics of strongly-interacting many-body systems. The aim of this Workshop is to bring together renown experts, senior and junior researchers, for a productive and inspiring discussion on the recent progress and future directions of research on open many-body quantum systems using Rydberg atoms and photons.

Topics of the workshop:

- Nonlinear quantum optics with Rydberg EIT and related effects
- Interfacing and hybridizing Rydberg atoms with other systems
- Resonant and non-resonant excitation of strongly interacting Rydberg lattice gases
- Dissipative preparation of correlated photonic and atomic states
- Molecules of Rydberg atoms

Invited Speakers:

Charles Adams (Durham University)
 József Fortágh (University of Tübingen)*
 Christian Gross (MPQ Garching)
 Igor Lesanovsky (University of Nottingham)
 Klaus Mølmer (Aarhus University)
 Herwig Ott (University of Kaiserslautern)
 Tilman Pfau (Stuttgart University)
 Hannes Pichler (Harvard University)
 Thomas Pohl (Aarhus University)
 Guido Pupillo (University of Strasbourg)
 Matthias Weidemüller (Heidelberg University)

Organizers: Michael Fleischhauer & David Petrosyan
<http://www.iesl.forth.gr/conferences/Rydberg/>

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