

## ITN COHERENCE – Conference Dresden, 7<sup>th</sup> to 12<sup>th</sup> July 2013

### Sunday, 7th July

18:00 - 19:30      *Registration - in guest house no. 4*

19:00 - 21:00      *Welcome - in guest house no. 4*

### Monday, 8th July

08:45 - 09:00      *Opening: Jan-Michael Rost, Managing Director of the mpiPKS*

*Chairman: Igor Lesanovsky*

#### Quantum information and entanglement I

09:00 - 09:40      **Mikhail Lukin**, Harvard University: Strongly interacting atoms and photons

09:40 - 10:20      **Mark Saffman**, University of Wisconsin: Quantum computation with a 2D array of trapped Rydberg atoms

10:20 - 10:50      *coffee break*

#### Rydberg interfaces and mechanical control I

10:50 - 11:30      **Mark Ford**, Oxford University: Surface induced ionisation dynamics of excited H atoms

11:30 - 12:10      **József Fortágh**, Universität Tübingen: Interfacing cold atoms and superconductors

12:10 - 12:50      **Robert Spreeuw**, University of Amsterdam: Rydberg atoms and lattices of magnetic micro traps

12:50 - 14:30      *lunch break - in the institute's main building*

*Chairman: Peter Schmelcher*

#### Many-body physics - Quantum gases I

14:30 - 15:10      **Jonathan Balewski**, Universität Stuttgart: Coupling a single Rydberg electron and a Bose-Einstein condensate

15:10 - 15:50      **Fabio Cinti**, Max-Planck-Institut für Physik komplexer Systeme: Defect-induced supersolidity with Rydberg atoms

15:50 - 16:30      *coffee break*

*cryp13 colloquium*

16:30 - 17:30      **Matthias Weidemüller**, Universität Heidelberg : Dressing photons with Rydberg atoms

17:40 - 18:20      **Guido Pupillo**, Université de Strasbourg : Anomalous Luttinger liquids of atoms with finite-range interactions

18:20 - 20:00      *supper - in guest house no. 4*

**Tuesday, 9th July**

*Chairman: Matthew Jones*

**Rydberg photonics I**

- 09:00 - 09:40      **Alex Kuzmich**, Georgia Institute of Technology: Quantum optics with Rydberg atoms
- 09:40 -10:20      **Alexey Gorshkov** , California Institute of Technology: Dissipative many-body quantum optics in Rydberg media
- 10:20 - 10:50      *coffee break*

**Energy transport and charge transfer**

- 10:50 - 11:30      **Luis Marcassa**, Universidade de São Paulo: Population transfer collisions in an optical dipole trap
- 11:30 -12:10      **Sebastian Wüster**, Max-Planck-Institut für Physik komplexer Systeme: Unfrozen superatoms: Break-up, collective motion and conical intersections
- 12:10 - 12:50      **Andreas Buchleitner**, Albert-Ludwigs-Universität Freiburg. Optimal coherent control to counteract dissipation
- 12:50 - 14:30      *lunch break - in the institute's main building*

*Chairman: Tilman Pfau*

**Rydberg interfaces and mechanical control II**

- 14:30 -15:10      **Frédéric Merkt**, ETH Zürich: Manipulating Rydberg atoms and molecules in the gas phase and near surfaces
- 15:10 -15:50      **Georg Raithel**, University of Michigan: Rydberg atoms in optical and magnetic trapping fields
- 15:50 - 16:20      *coffee break*

**Few-body phenomena in exotic molecules I**

- 16:20 -17:00      **Dieter Jaksch**, University of Oxford: Magnetic monopoles and synthetic spin-orbit coupling in Rydberg macrodimers
- 17:00 -17:40:      **Rosario González-Férez**, Universidad de Granada : Triatomic Rydberg molecules in external fields
- 17:40 -18:20      **Hossein Sadeghpour**, Harvard University: Expecting the unexpected in long-range Rydberg molecules
- 18:20 -20:00      *supper - in guest house no. 4*
- 20:00 -22:00      *poster session (focus on even poster numbers)*

## Wednesday, 10th July

*Chairman: Jörg Evers*

### **Many-body physics - Lattices I**

- 09:00 - 09:40      **Christian Gross**, Max-Planck-Institut für Quantenoptik: Long range interacting many-body systems with Rydberg atoms
- 09:40 - 10:20      **Andreas Läuchli**, Universität Innsbruck: Floating, crystalline and paramagnetic phases in chains of interacting Rydberg atoms
- 10:20 - 10:50      *group photo (to be published on the event's web page) & coffee break*

### **Many-body physics - Frozen gases I**

- 10:50 - 11:30      **Pierre Pillet**, (CNRS - Université Paris-Sud : Two-, few- and many-body effects in a frozen Rydberg gas
- 11:30 - 12:10      **Michael Fleischhauer**, Universität Kaiserslautern: Steady-state correlations in Rydberg gases and Rydberg polaritons
- 12:10 - 12:50      **Igor Lesanovsky**, University of Nottingham: Dissipative interactions in Rydberg lattice gases
- 12:50 - 14:30      *lunch break - in the institute's main building*
- 14:30 - 16:30 *guided tour through the exhibition Constable, Delacroix, Friedrich and Goya. A Shock to the Senses.*
- 19:30 -      *conference dinner in the Carolaschlösschen*

## Thursday, 11th July

*Chairman: Georg Raithel*

### Many-body physics - Frozen gases II

- 09:00 - 09:40      **Thomas Gallagher**, University of Virginia: Microwave spectroscopy of the cold Rydberg gas  
09:40 - 10:20      **Herwig Ott**, Universität Kaiserslautern: Millisecond dynamics of ultracold Rydberg gases  
10:20 - 10:50      *coffee break*

### Few-body phenomena in exotic molecules II

- 10:50 - 11:30      **James Shaffer**, The University of Oklahoma: Ultracold Rydberg atom molecules and interactions  
11:30 - 12:10      **Hendrik Weimer**, Leibniz Universität Hannover: Binding by dissipation  
12:10 - 12:50      **Hans Peter Büchler**, Universität Stuttgart: Hybrid setup of polar molecules and Rydberg atoms  
12:50 - 14:30      *lunch break - in the institute's main building*

*Chairman: Oliver Morsch*

### Few-body phenomena in exotic molecules III

- 14:30 - 15:10      **Chris Greene**, Purdue University: Rydberg molecule spectra and dynamics  
15:10 - 15:50      **Peter Schmelcher**, Universität Hamburg: Ultralong-range molecules in external fields  
15:50 - 16:20      *coffee break*

### Rydberg photonics II

- 16:20 - 17:00      **Ofer Firstenberg**, Harvard University: Quantum nonlinear optics with Rydberg polaritons  
17:00 - 17:40      **Brian Kennedy**, Georgia Institute of Technology: Quantum optics in interacting Rydberg media  
17:40 - 18:20      **Tilman Pfau**, Universität Stuttgart: Rydberg photonics in thermal vapor cells  
18:20 - 20:00      *supper - in guest house no. 4*
- 20:00 - 22:00      *poster session (focus on odd poster numbers)*

## Friday, 12th July

*chairman: Mark Saffman*

### Two-electron Rydberg atoms

- 09:00 - 09:40      **Matthew Jones**, Durham University: Quantum optics with one and two electron Rydberg atoms
- 09:40 - 10:20      **Moritz Hiller**, Albert-Ludwigs-Universität Freiburg: Exciting and probing polarized strontium Rydberg atoms
- 10:20 - 10:50      *coffee break*

### Quantum information and entanglement II

- 10:50 - 11:30      **Ferdinand Schmidt-Kaler**, Universität Mainz: Rydberg interactions of cold trapped ions
- 11:30 - 12:10      *Lunch break - in the institute's main building* **toine Browaeys**, CNRS: Direct measurement of the interaction between 2 Rydberg atoms
- 12:10 - 12:50      **Andrei Derevianko**, University of Nevada: Magic trapping of Rydberg atoms
- 12:50 - 14:30      /

*Chairman: Alexey Gorshkov*

### Many-body physics - Quantum gases II

- 14:30 - 15:10      **Wolfgang Lechner**, Universität Innsbruck: Non-equilibrium phases in dipolar crystals: Quantum-glass and defect dynamics
- 15:10 - 15:50      **Massimo Boninsegni**, University of Alberta: Supersolid phases of cold atom assemblies
- 15:50 - 16:20      *coffee break*

### Many-body physics - Lattices II

- 16:20 - 17:00      **Jörg Evers**, (Max-Planck-Institut für Kernphysik: "Self-assembly" and dissipative dynamics in strongly interacting Rydberg gases
- 17:00 - 17:40      **Oliver Morsch**, INO-CNR: Full counting statistics and phase diagram of a dissipative Rydberg gas
- 17:40 - 18:20      **Tony Lee**, Harvard University: Unconventional magnetism in the dissipative XYZ model with Rydberg atoms
- 18:20 - 18:40      *closing*
- 18:40 - 20:00      *supper - in guest house no. 4*