



RESEARCH CONFERENCES

ESF-FWF Conference in Partnership with LFUI

Quantum Optics: From Photons and Atoms to Molecules and Solid State Systems

Universitätszentrum Obergurgl (Ötz Valley, near Innsbruck) • Austria
24 February - 1 March 2008

Chair: **Jörg Schmiedmayer**, TU-Wien, Atominstitut der Österreichischen
Universitäten, AT

Co-Chairs: **Hanns-Christoph Nägerl** & **Helmut Ritsch**, University
of Innsbruck, AT

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Final Programme

Sunday 24 February

Late afternoon / early evening	Registration at the ESF-RC desk
19.00	Welcome Drink
20.00	Supper

Monday 25 February

08.15-08.30	Conference Opening
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Session 1: QI 1

08.30-09.00	Mikhail Lukin Harvard University, US <i>Quantum Optics with Plasmons</i>
09.00-09.30	J. Garcia Ripoll Universidad Complutense de Madrid, ES <i>Quantum Information with Atoms</i>
09.30-10.00	Coffee Break
10.00-10.30	Christian Roos Universität Innsbruck, AT <i>High-fidelity quantum gates with ions</i>
10.30-11.00	Anna Sanpera Universitat Autònoma de Barcelona, ES <i>Quantum polarization spectroscopy of ultracold spinor gases</i>
11.00	Lunch
15.30-16.00	Coffee Break

Session 2: Molecules

16.00-16.30	Markus Arndt University of Vienna, AT <i>Quantum optics with large and floppy things: progress in macromolecule interferometry</i>
16.30-17.00	Wolfgang Ernst Universität Graz, AT <i>Atomic and Molecular Clusters</i>
17.00-17.30	Gerhard Rempe MPQ Garching, DE <i>Cold and Ultracold Molecules: En Route into a New Field of Physics</i>
17.30-18.00	Mikhail Baranov University of Amsterdam, NL <i>Strongly correlated states in rapidly rotating fermionic dipolar gases</i>

18.10-20.00 Dinner
20.00-21.30 Poster Session I

Tuesday 26 February

Session 3: CQED

08.30-09.00 **Benjamin Lev**
University of Illinois at Urbana-Champaign (UIUC), US
Cooling Molecules in a Cavity

09.00-09.30 **Igor Mekhov**
Universität Innsbruck, AT
Quantum optics with quantum gases: Light scattering and cavity QED with ultracold atoms in optical lattices

09.30-10.00 Coffee Break

10.00-10.30 **Michel Brune**
ENS Paris, FR
Cavity QED with Rydberg Atoms

10.30-11.00 **Alexandre Blais**
Université de Sherbrooke, CA
Superconducting Qbits and Circuit QED

11.00 Lunch

15.30-16.00 Coffee Break

Session 4: Solid State QI

16.00-16.30 **P. Törma – HOT TOPIC**
Imbalanced Fermi gases and FFLO state in optical lattices and exact numerical studies of RF-spectroscopy

16.30-17.00 **Markus Aspelmeyer**
Austrian Academy of Sciences, AT
TBA

17.00-17.30 **Kees Harmans**
TU Delft, NL
Superconducting Qbits

17.30-18.00 **Tristan Briant**
Laboratoire Kastler Brossel, FR
TBA

18.10-20.00 Dinner
20.00-21.30 Poster Session I

Wednesday 27 February

Session 5: QI 2

08.30-09.00	Signe Seidelin NIST, US <i>Ion Traps</i>
09.00-09.30	Dagmar Bruss Universität Düsseldorf, DE <i>Secret key rates in QKD with a finite number of signals</i>
09.30-10.00	Coffee Break
10.00-10.30	Barbara Kraus Universität Innsbruck, AT <i>Quantum Kolmogorov Complexity</i>
10.30-11.00	Jian-Wei Pan Heidelberg University, DE / University of Science and Technology of China (USTC), CN <i>Atom-Photon Quantum Interface</i>
11.00	Lunch
15.30-16.00	Coffee Break

Session 6: Overview Talk

16.00-16.20	S. Dürr - Hot Topic <i>Dissipation Fermionizes a One-Dimensional Gas of Bosonic Molecules</i>
16.20-16.40	M. Fleischhauer - Hot Topic <i>Bose-Einstein condensation of stationary-light polaritons</i>
16.40-17.00	E. Haller - Hot Topic <i>Matter-wave interference due to interactions</i>
17.00-17.20	C. Tuchendler - Hot Topic <i>Single neutral atomic qubit manipulations in microscopic optical dipole traps</i>
17.20-17.40	P. Treutlein - Hot Topic <i>Bose-Einstein condensates coupled to solid state systems on an atom chip</i>
17.40-18.00	M. Kowalewski - Hot Topic <i>Ab initio based calculations of cavity cooling including the rovibrational modes of the OH and the NO radical</i>
18.00-20.00	Open Discussion
20.00	Conference Dinner

Thursday 28 February

Session 7: Atoms & Molecules

- 08.30-09.00 **Marco Fattori**
LENS Florence, IT
Ultracold Atoms in Lattices
- 09.00-09.30 **Florian Schreck**
Austrian Academy of Sciences, AT
Exploring an ultracold Fermi-Fermi mixture: interspecies Feshbach resonances of $6\text{Li}-40\text{K}$
- 09.30-10.00 Coffee Break
- 10.00-10.30 **Gerard Meijer**
Fritz-Haber-Institut (FHI) Berlin, DE
Decelerating and Trapping Molecules
- 10.30-11.00 **Dave DeMille**
Yale University, US
Polar molecules
- 11.00 Lunch
- 15.30-16.00 Coffee Break

Session 8: Low-D

- 16.00-16.30 **Christian Gross**
University of Heidelberg, DE
Slicing a Bose-Einstein Condensate: Direct observation of number squeezing
- 16.30-17.00 **Ehud Altman**
Weizmann Institute of Science, IL
Probing strongly correlated states of ultracold atoms
- 17.00-17.30 **Thorsten Schumm**
TU Wien, AT
Noise and Decoherence in 1d systems
- 17.30-18.00 **Jean Dalibard**
ENS Paris, FR
Quantum Physics in Flatland
- 18.10 - 20.00 Dinner
- 20.00-21.30 Poster Session II

Friday 29 February

Session 9: Ensemble QI

- 08.30-09.00 **Eugene Polzik**
Niels Bohr Institute, DK
Quantum Memory for Light
- 09.00-09.30 **Elizabeth Giacobino**
CNRS, FR
Optical quantum effects and spin control in semiconductor microcavities

09.30-10.00	Coffee Break
10.00-10.30	Atac Imamoglu ETH Zürich, CH <i>Quantum Optics in Solid State Systems</i>
10.30-10.50	F. Ferlino - Hot Topic <i>Ultracold Cesium molecules and Cs-Rb mixtures</i>
10.50-11.10	R. Lopez - Hot Topic <i>Pair Tunnelling and Shot Noise through Molecular Transistors</i>
11.10	Lunch
15.30-16.00	Coffee Break

Session 10: Atom-Lattice

16.00-16.30	Immanuel Bloch Universität Mainz, DE <i>Quantum Simulation in Optical Lattices</i>
16.30-17.00	Andrea Micheli Universität Innsbruck, AT <i>TBA</i>
17.00-17.30	Tobias Donner ETH Zurich, CH <i>Cavity QED with a BEC</i>
17.30-18.00	Dieter Jaksch Oxford University, UK <i>Degenerate Quantum Gases</i>
18.10-20.00	Dinner
20.00-21.30	Poster Session II

Saturday 1 March

Breakfast & Departure