

PROGRAM

Monday, 28 July 2008

07:00 – 13:00 Registration

08:00 – 08:30 **Opening addresses**

Location: Pyramida Hotel Lecture Hall

08:30 – 10:00 **1 session: Quantum and mesoscopic thermodynamics**

Location: Pyramida Hotel Lecture Hall

08:30 – 09:00 Guenter Mahler: *Quantum thermodynamic processes*

09:00 – 09:30 Udo Seifert: *Stochastic thermodynamics: Theory and experiments*

09:30 – 10:00 Reinhard Lipowsky: *Multiscale motility of molecular motors*

10:00 – 10:20 Coffee break

10:20 – 12:00 **2 session: Quantum and mesoscopic thermodynamics**

Location: Pyramida Hotel Lecture Hall

10:20 – 10:50 Gershon Kurizki: *Control of non-Markovian quantum thermodynamics*

10:50 – 11:20 Martin Plenio: *Entanglement theory, thermodynamics and the 2nd law*

11:20 – 11:40 Gert-Ludwig Ingold: *Quantum Brownian motion and the third law of thermodynamics*

11:40 – 12:00 Peter Talkner: *Quantum fluctuation theorems*

12:00 – 13:00 Lunch

13:00	–	14:40	3 session: Foundations of quantum mechanics	
			<i>Location: Pyramida Hotel Lecture Hall</i>	
13:00	–	13:30	Andrei Khrennikov:	<i>QM as approximative probabilistic model</i>
13:30	–	14:00	Ana Maria Cetto:	<i>Quantization as an emergent property of a matter-field system in permanent interaction</i>
14:00	–	14:20	Hans De Raedt:	<i>Even-by-event simulation of quantum phenomena</i>
14:20	–	14:40	Yuval Gefen:	<i>Weak values in solid state</i>
14:40	–	15:00	Coffee break	
15:00	–	16:40	4 session: Quantum dissipation, decoherence and noise	
			<i>Location: Pyramida Hotel Lecture Hall</i>	
15:00	–	15:30	Ulrich Weiss:	<i>Decoherence and relaxation of coupled qubits</i>
15:30	–	16:00	Amir O. Caldeira:	<i>Dissipative dynamics of a two-level system resonantly coupled to a harmonic mode.</i>
16:00	–	16:20	Sigmund Kohler:	<i>Dissipative Landau-Zener tunneling in circuit QED and nanomagnets</i>
16:20	–	16:40	Thomas Vojta:	<i>Effects of dissipation on quantum critical points with disorder</i>
16:40	–	18:00	Free time and transfer to Wallenstein Palace	
18:00	–	19:30	Guided tour through the Wallenstein Palace	
			<i>Location: Wallenstein Palace</i>	
19:30	–	23:00	Welcome party in the Wallenstein Palace Garden	

Tuesday, 29 July 2008

08:00	–	10:00	1 session: Mesoscopic and nano-electromechanical systems	
			<i>Location: Pyramida Hotel Lecture Hall</i>	
08:00	–	08:30	Hermann Grabert:	<i>Decay of metastable states driven by non-Gaussian noise</i>

08:30	–	09:00	Yoseph Imry:	<i>Effect of pair-breaking on mesoscopic persistent currents far above the superconducting T_c.</i>
09:00	–	09:20	Yuri Galperin:	<i>Decoherence in quantum devices due to low-frequency noise of environment: Role of non-Gaussian effects</i>
09:20	–	09:40	Irena Knezevic:	<i>Decoherence due to contacts in ballistic nanostructures</i>
09:40	–	10:00	Branislav K. Nikolic:	<i>Shot noise probing of spin decoherence in quantum transport through spintronic nanostructures</i>
10:00	–	10:20	Coffee break	
10:20	–	12:00	2 session: Mesoscopic and nano-electromechanical systems <i>Location: Pyramida Hotel Lecture Hall</i>	
10:20	–	10:50	Miles Blencowe:	<i>Damping and decoherence dynamics of nanomechanical resonators</i>
10:50	–	11:20	Robert H. Blick:	<i>Self-excitation in nano-electromechanical systems</i>
11:20	–	11:40	Andrew Armour:	<i>Quantum dynamics of a resonator driven by a superconducting single electron transistor: A solid state analogue of the micromaser</i>
11:40	–	12:00	Christoph Bruder:	<i>Position and momentum detection in nano-electromechanical systems</i>
12:00	–	13:00	Lunch	
13:00	–	14:40	3 session - A parallel: Mesoscopic and nano-electromechanical systems <i>Location: Pyramida Hotel Lecture Hall A</i>	
13:00	–	13:20	Jan von Delft:	<i>Phase-coherent transport through quantum dots</i>
13:20	–	13:40	Alexander Altland:	<i>A many particle Landau Zener problem</i>
13:40	–	14:00	Andreas Wacker:	<i>Nonequilibrium transport in quantum dot systems</i>
14:00	–	14:20	Igor Lerner:	<i>Quantum wire hybridized with a side-attached impurity</i>

14:20 – 14:40 Vladimir Falko: *Percolation through electron-hole puddles: Model for transport in strongly inhomogeneous graphene*

13:00 – 14:40 **3 session - B parallel: Foundations of quantum physics**

Location: Pyramida Hotel Lecture Hall B

13:00 – 13:20 Mark Davidson: *The quark-gluon plasma and the stochastic interpretation of quantum mechanics*

13:20 – 13:40 Luis de la Pena: *Signs of electron diffraction obtained by numerical simulation of a diffracted zero-point radiation field*

13:40 – 14:00 Kristel Michielsen: *Event-based computer simulation of Wheeler's delayed choice experiment with photons*

14:00 – 14:20 Bahar Mehmani: *Work as tracer of the force that generates the geometric phase*

14:20 – 14:40 Gennaro Auletta: *Quantum-mechanical measurement process as a general framework for information acquiring*

14:40 – 15:00 Coffee break

15:00 – 16:40 **4 session - A parallel: Quantum dissipation, decoherence and noise**

Location: Pyramida Hotel Lecture Hall A

15:00 – 15:20 Wolfgang Belzig: *Positive operator valued measure formulation of time-resolved electron counting statistics*

15:20 – 15:40 Yaroslav M. Blanter: *Current and noise in a single-electron transistor coupled to an oscillator*

15:40 – 16:00 Jochen Gemmer: *Projection operator approach to transport and relaxation in closed quantum systems*

16:00 – 16:20 Tobias Brandes: *Waiting times and noise in single particle transport*

16:20 – 16:40 Tomáš Novotný: *Counting statistics of non-Markovian quantum stochastic processes*

15:00	–	16:40	4 session - B parallel: Quantum optics	
			<i>Location: Pyramida Hotel Lecture Hall B</i>	
15:00	–	15:20	Valentina Brosco:	<i>Phase diffusion in single qubit lasers</i>
15:20	–	15:40	Francesco Petruccione:	<i>Density matrice and their parametrization</i>
15:40	–	16:00	Norbert Kroó:	<i>Nonlinear and quantum plasmonics</i>
16:00	–	16:20	George R. Welch:	<i>Toward XUV Raman superradiance: breaking of adiabaticity</i>
16:20	–	16:40	Raymond Ooi:	<i>How do pulsed lasers affect photon correlation and entanglement?</i>
16:40	–	17:00	Free time	
17:00	–	20:00	Poster session	
			<i>Location: Pyramida Hotel - first floor</i>	

Wednesday, 30 July 2008

08:00	–	10:00	1 session: Physics of quantum measurement	
			<i>Location: Pyramida Hotel Lecture Hall</i>	
08:00	–	08:30	Nicolas Gisin:	<i>Towards understanding quantum correlations: New Bell tests and simulating partial entanglement with nonlocal boxes</i>
08:30	–	09:00	Denis Vion:	<i>Continuous measurement of a driven quantum electrical circuit</i>
09:00	–	09:20	Andrew Jordan:	<i>Weak values and the Leggett-Garg inequality in solid-state qubits</i>
09:20	–	09:40	Fritz Haake:	<i>Quantum measurement without Schrödinger cat states</i>
09:40	–	10:00	Roger Balian:	<i>Simultaneous measurement of non commuting observables</i>
10:00	–	10:20	Coffee break	
10:20	–	12:00	2 session: Physics of quantum computing and information	
			<i>Location: Pyramida Hotel Lecture Hall</i>	
10:20	–	10:50	Wolfgang Hänsel:	<i>Advances in ion trap quantum computation</i>

10:50	–	11:20	Dirk Bouwmeester:	<i>Solid-state cavity QED and optomechanical structures</i>
11:20	–	11:40	David Vitali:	<i>Entanglement in mesoscopic optomechanical systems</i>
11:40	–	12:00	Mark Fox:	<i>Coherent quantum control of excitons and spins in quantum dots</i>
12:00	–	13:00	Lunch	
13:00	–	15:00	3 session: Physics of quantum computing and information	
			<i>Location: Pyramida Hotel Lecture Hall</i>	
13:00	–	13:30	Wolfgang Tittel:	<i>Combining quantum memory with state manipulation</i>
13:30	–	14:00	Howard Brandt:	<i>Differential geometry of quantum computation</i>
14:00	–	14:30	Barry Sanders:	<i>Simulating Hamiltonian evolution on a quantum computer</i>
14:30	–	15:00	Elisabetta Paladino:	<i>Coherent nanodevices as detectors of structured solid-state noise sources</i>
15:00	–	18:00	Free time and transfer to St. Simon and Juda Church	
16:15	–	17:45	Refreshment	
			<i>Location: Kozička Bar - Kozí street</i>	
18:00	–	21:45	Evening session: Public lecture of Marlan Scully and concert	
			<i>Location: St. Simon and Juda Church</i>	
18:00	–	18:15	Music introduction and opening address by Peter Keefe	
18:15	–	19:30	Public lecture of Marlan Scully	
18:15	–	19:15	Marlan Scully:	<i>The demon and the quantum: From thermodynamics to quantum mechanics and beyond</i>
19:15	–	19:30	Discussion after the lecture of Marlan Scully	
19:30	–	20:00	Break	
20:00	–	20:50	Concert - First part	
20:50	–	21:00	Break	
21:00	–	21:45	Concert - Second part	

Thursday, 31 July 2008

08:00 – 10:00 **1 session: Quantum optics**

Location: Pyramida Hotel Lecture Hall

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| 08:00 | – | 08:30 | Julien Laurat: | <i>Quantum networking with atomic ensembles in the single excitation regime</i> |
| 08:30 | – | 09:00 | Linda Elizabeth Reichl: | <i>Quantum control of atomic and molecular systems</i> |
| 09:00 | – | 09:20 | H. J. Carmichael: | <i>Open quantum systems, entanglement, and the laser quantum state</i> |
| 09:20 | – | 09:40 | Timothy Ralph: | <i>Entanglement in curved space time</i> |
| 09:40 | – | 10:00 | M. Suhail Zubairy: | <i>Optical sub-wavelength lithography: With and without entanglement</i> |

10:00 – 10:20 Coffee break

10:20 – 12:00 **2 session: Physics of biological systems**

Location: Pyramida Hotel Lecture Hall

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|-------|---|-------|------------------|--|
| 10:20 | – | 10:50 | H. Frauenfelder: | <i>Protein dynamics</i> |
| 10:50 | – | 11:20 | Felix Ritort: | <i>Mechanical manipulation of nucleic acids at 1kT energy resolution</i> |
| 11:20 | – | 11:40 | Marlan Scully: | <i>Using quantum mechanics to detect anthrax</i> |
| 11:40 | – | 12:00 | Allen Hermann: | <i>New nanoscale materials and devices</i> |
- 12:00 – 13:00 Lunch

13:00 – 14:40 **3 session - A parallel: Quantum thermodynamics, dissipation and decoherence**

Location: Pyramida Hotel Lecture Hall

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| 13:00 | – | 13:20 | Frank Willem Hekking: | <i>Normal metal - superconductor tunnel junction as a Brownian refrigerator</i> |
| 13:20 | – | 13:40 | Juan Pablo Paz: | <i>Dynamics of the entanglement between two oscillators in the same environment</i> |
| 13:40 | – | 14:00 | Joachim Ankerhold: | <i>Semiclassical dynamics of non-Markovian quantum Brownian motion</i> |
| 14:00 | – | 14:20 | Jiří J. Mareš: | <i>Temperature transformation and Mosengeil-Ott's antinomy</i> |

14:20	–	14:40	Peter Keefe:	<i>The second law of thermodynamics and quantum heat engines: Is the law strictly enforced?</i>
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13:00	–	14:40	3 session - B parallel: Mesoscopic and non-electromechanical systems	
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Location: Pyramida Hotel Cinema Hall

13:00	–	13:20	Jerzy Luczka:	<i>Negative conductances in Josephson junctions</i>
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13:20	–	13:40	Doron Cohen:	<i>The conductance of small mesoscopic disordered rings</i>
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13:40	–	14:00	Andrei Zaikin:	<i>Zero temperature decoherence of interacting electrons: The end of the story?</i>
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14:00	–	14:20	Gloria Platero:	<i>Spin transport in double quantum dots: role of hyperfine interaction</i>
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14:20	–	14:40	Marta Prada:	<i>Quantum computation with silicon: ultra-long decoherence and relaxation times in quantum systems</i>
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14:40	–	15:00	Coffee break	
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15:00	–	17:00	4 session: Non-equilibrium quantum statistical physics	
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Location: Pyramida Hotel Lecture Hall

15:00	–	15:30	John Barker:	<i>Quantum phase space distribution functions for non-equilibrium transport</i>
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15:30	–	16:00	Pawel Danielewicz:	<i>Towards quantum transport for nuclear reactions</i>
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16:00	–	16:20	Karsten Balzer:	<i>Quantum kinetic theory for artificial atoms</i>
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16:20	–	16:40	Václav Špička:	<i>Dynamics of mesoscopic systems: Non-equilibrium Green's functions approach</i>
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16:40	–	17:00	Bedřich Velický:	<i>Single molecule bridge in transient regime as a testing ground for using NGF outside of the steady current regime</i>
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17:00	–	18:30	Free time	
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18:30	–	24:00	Evening session: Public lecture of Georgy Shlyapnikov and jazz concert
<i>Location: Pyramida Hotel Cinema Hall</i>			
18:30	–	18:40	Opening address by Theo Nieuwenhuizen
18:40	–	20:00	Public lecture of Georgy Shlyapnikov
18:40	–	19:40	Georgy Shlyapnikov: <i>Novel physics with ultracold fermions</i>
19:40	–	20:00	Discussion after the lecture of Georgy Shlyapnikov
20:00	–	20:30	Break
20:30	–	24:00	Jazz concert

Friday, 1 August 2008

08:00	–	10:00	1 session: Spins systems and their dynamics
<i>Location: Pyramida Hotel Lecture Hall</i>			
08:00	–	08:30	Dietrich Belitz: <i>Electronic properties of helimagnets</i>
08:30	–	09:00	Avraham Schiller: <i>Quantum impurity systems out of equilibrium: Real-time dynamics</i>
09:00	–	09:20	Amnon Aharony: <i>Spin selection by mesoscopic systems with spin-orbit interactions</i>
09:20	–	09:40	Ora Entin-Wohlman: <i>Spin Hall effect</i>
09:40	–	10:00	Pascal Simon: <i>Nuclear spin ordering in interacting 2D and 1D electron liquids</i>
10:00	–	10:20	Coffee break
10:20	–	12:00	2 session: Macroscopic quantum behaviour
<i>Location: Pyramida Hotel Lecture Hall</i>			
10:20	–	10:50	Stephanie M. Reimann: <i>From quantum dots to cold atoms in traps - interaction blockade and vortices</i>
10:50	–	11:20	Iacopo Carusotto: <i>The non-equilibrium Bose-Einstein condensation phase transition in microcavity polariton systems</i>
11:20	–	11:40	Giacomo Roati: <i>An ideal Bose-Einstein condensate: from precision measurements to Anderson localization</i>
11:40	–	12:00	Matthias Vojta: <i>Valence-bond supersolids in cuprates</i>

12:00 – 13:00 Lunch

13:00 – 15:00 **3 session: Non-equilibrium quantum statistical physics**

Location: Pyramida Hotel Lecture Hall

13:00 – 13:30 James Freericks: *Nonequilibrium dynamical mean-field theory*

13:30 – 14:00 Jens Eisert: *Looking relaxed: Apparent local equilibration in closed non-equilibrium quantum many-body dynamics*

14:00 – 14:30 Giuseppe Falci: *Dynamics of Weyl quasiparticles in the presence of quantum noise*

14:30 – 15:00 Eugene Sukhorukov: *Dephasing in the electronic Mach-Zehnder interferometers*

15:00 – 16:30 Free time and transfer to Břevnov Monastery

16:30 – 24:00 **Conference dinner and organ concert**

Location: Břevnov Monastery

16:30 – 17:00 Welcome in the atrium of the Břevnov Monastery

17:00 – 18:00 Guided tour through Břevnov Monastery

18:00 – 21:00 First part of the conference dinner

21:00 – 21:50 **Organ concert**

21:50 – 24:00 Second part of the conference dinner

Saturday, 2 August 2008

08:00 – 10:00 **1 session**

Location: Pyramida Hotel Lecture Hall

08:00 – 08:30 Fernando Sols: *Nonadiabatic pumping of heat in electron systems*

08:30 – 09:00 Hans Briegel: *Entanglement in quantum many-body systems far away from equilibrium: Are there non-trivial quantum effects in biology?*

09:00 – 09:30 Hagen Kleinert: *Third quantization*

09:30 – 10:00 Arkady Plotnitsky: *Physical and mathematical causality in quantum theory*

10:00 – 10:20 Cofee break

10:20 – 11:20 **2 session**

Location: Pyramida Hotel Lecture Hall

10:20 – 10:50 Raymond Chiao: *Experiments at the interface of quantum mechanics and general relativity: Transduction between electromagnetic and gravitational waves via pairs of charged superconductors*

10:50 – 11:20 Theo M. Nieuwenhuizen: *Supermassive black holes as giant Bose-Einstein condensates*

11:20 – 11:30 Coffee break

11:30 – 13:00 **Round table**

Location: Pyramida Hotel Lecture Hall

13:00 – 13:15 **Closing address**

Location: Pyramida Hotel Lecture Hall

13:15 – 14:15 Lunch