



Institute of Physics,
University of Belgrade



Serbian Academy
of Sciences and Arts

CEWQO 2008

15th Central European
Workshop on Quantum Optics

Belgrade, 30 May – 03 June, 2008
Serbian Academy of Sciences and Arts
University of Belgrade, Rectorate

Conference topics

- 1. Fundamental aspects of quantum optics and quantum mechanics**
- 2. Single photons and photon pairs**
- 3. Cavity and circuit QED**
- 4. Atoms in intense fields**
- 5. Neutron, atom and molecular quantum optics**
- 6. Quantum gases and fluids**
- 7. Coherence, entanglement and decoherence**
- 8. Optical properties of condensed matter and nanostructures**
- 9. Open quantum systems and chaos**
- 10. Quantum information processing**

COMMITTEES

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FRIDAY, 30 MAY – SASA Lecture hall 1

9:00 OPENING CEREMONY

HAJDIN Nikola, President of the Serbian Academy of Sciences and Arts
KOVAČEVIĆ Branko, Rector of the University of Belgrade
POPOVIĆ Dragan, Director of the Institute of Physics
JOVIĆEVIĆ Marina, CEI National Coordinator of Serbia

Chairman: Nikola KONJEVIĆ

- 9:30 **WALTHER Philip**
Multi-photon entanglement and the possibility to generate single-photons using room-temperature ensembles of ^{87}Rb atoms
- 10:00 **SKENDEROVIĆ Hrvoje**
Four wave mixing with femtosecond pulses
- 10:30 **BECKER Uwe**
Electron entanglement through tunneling-induced coherence between two emitter sites

11:00 - 11:30 **COFFEE BREAK**

Chairman: Antonino MESSINA

- 11:30 **MASTELLONE Andrea**
Protected subspaces against charge noise in coupled charge-phase qubits
- 11:50 **OBLAK Daniel**
Spin squeezing on the caesium clock transition
- 12:10 **ZIPPER Elzbieta**
Entanglement of distant flux qubits by swapping
- 12:30 **D'ANGELO Milena**
Toward real NOON-state sources

13:00 - 15:00 **LUNCH**

Chairman: Vladimir DODONOV

- 15:00 **HENNRICH Markus**
Universal ion trap quantum computation on logical qubits
- 15:30 **MAN'KO Margarita**
Probabilistic characteristics of classical and quantum waves
- 16:00 **KISS Tamas**
Recurrence properties and polya number of quantum walks

16:30 - 17:00 **COFFEE BREAK**

FRIDAY, 30 MAY – SASA Lecture hall 1

Chairman: Chaslav BRUKNER

- 17:00 **ISAR Aurelian**
Entanglement in open quantum dynamics
- 17:20 **KHVESHCHENKO Dmitry**
Many-body effects in multi-qubit arrays
- 17:40 **CHIRKIN Anatoly**
Forming four-partite entangled states in nondegenerate parametric amplification at low frequency pumping
- 18:00 **DOMOTOR Piroška**
On global entanglement of N -qubit pure state
- 18:40 **VILLAS Boas Celso**
Reservoir engineering for cavity field and atomic states and decoherence-free evolutions in cavity quantum electrodynamics

FRIDAY, 30 MAY – SASA Lecture hall 2

Chairman: Luigi MOI

- 11:30 **OKULOV Alexey**
Vortex-antivortex labyrinth wavefunction
- 11:50 **GLIGORIĆ Goran**
Localized modes in the cigar-shaped Bose-Einstein condensates in a very deep optical lattice
- 12:10 **BUHMANN Stefan Yoshi**
Thermodynamics of atoms in nontrivial environments
- 12:30 **PATEREK Tomasz**
Mathematical undecidability and randomness in quantum experiments

13:00 - 15:00 **LUNCH**

Chairman: Slobodan CVEJANOVIĆ

- 17:00 **TADIĆ Milan**
Excitons in stacks of semiconductor quantum rings
- 17:20 **GORELIK Vladimir**
Massive photons properties in 3D-photonics crystals, filled by dielectrics or metals
- 17:40 **OZTOP Baris**
Quantum entanglement of spin-1 bosons in optical lattices
- 18:00 **BERKDEMIR Cuneyt**
The temperature-dependent analysis of the quantum limited noise figure for two-level optical fiber amplifiers
- 18:20 **NEMILENTSAU Andrei**
Photonic density of states in the vicinity of finite-length single-wall carbon nanotube

19:00 - 21:00 **WELCOME COCKTAIL – Club SASA, Mezanin**

SATURDAY, 31 MAY – RECTORATE Lecture hall 1

Chairman: Leposava VUŠKOVIĆ

- 9:00 **KOROLKOVA Natalia**
Entanglement distribution: new concepts and the continuous variable toolbox
- 9:30 **WEIS Antoine**
Multichannel atomic magnetometers
- 10:00 **MOI Luigi**
Photoinduced effects on atoms and clusters embedded in polymer films and nanoporous silica

10:30 - 11:00 **COFFEE BREAK**

Chairman: PERINA Jan

- 11:00 **D'ARRIGO Antonio**
Dephasing channels with memory
- 11:20 **LEMR Karel**
Preparation of entangled states of two photons in several spatial modes
- 11:40 **STOBINSKA Magdalena**
Perfect photon-atom coupling in free space
- 12:00 **GABRIS Aurel**
Optimized quantum random walk search algorithms
- 12:20 **PAUNKOVIĆ Nikola**
Macroscopic distinguishability between quantum states defining different phases of matter

13:00 - 15:00 **LUNCH**

Chairman: Verner VOGEL

- 15:00 **GAWLIK Wojciech**
Experiments on the dynamics of Bose-Einstein condensate in finite temperatures
- 15:30 **PASCAZIO Saverio**
Statistical mechanics of multipartite entanglement
- 16:00 **NAPOLI Anna**
A new measure of multipartite entanglement

16:30 - 17:00 **COFFEE BREAK**

17:00 - 18:30 **POSTER SESSION - Topics: 1 and 8**

SATURDAY, 31 MAY – RECTORATE Lecture hall 2

Chairman: Ryszard TANAS

- 11:00 **PERINA Jan**
Generation of entangled photon pairs from nonlinear layered structures
- 11:20 **LAZAROU Constantinos**
Entanglement in the adiabatic limit of cavity QED with pairs of atoms
- 11:40 **DODONOV Victor**
Dynamical Casimir effect and resonance frequency shifts in cavities with thin photo-excited semiconductor layers
- 12:00 **NEMETH Istvan**
Quantum theory of the coherently pumped micromaser
- 12:20 **KHANBEKYAN Mikayel**
*Spontaneous emission of a single atom in a high-Q cavity:
Pulse shape and efficiency of one-photon Fock state preparation*

13:00 - 15:00 **LUNCH**

SUNDAY, 1 JUNE – RECTORATE Lecture hall 1

Chairman: Paulina MARIAN

- 9:00 **VOGEL Werner**
Nonclassical P-functions and space-time dependent correlations
- 9:30 **ZIMAN Mario**
Discrimination of quantum observables
- 10:00 **TANAS Ryszard**
Dynamics of entanglement in a dissipative environment

10:30 - 11:00 **COFFEE BREAK**

Chairman: Uwe BECKER

- 11:00 **DIMITROVA Todorka**
Quantum erasing with single photons: a lecture demonstration experiment
- 11:20 **SANZ Angel**
Bohmian mechanics: A trajectory picture of quantum mechanics
- 11:40 **DAVIDOVIĆ Milena**
Electromagnetic energy flow lines and/or the paths of photons
- 12:00 **KUPCZYNSKI Marian**
Is the quantum theory predictably complete?
- 12:20 **MAN'KO Olga**
Star-product quantization; symplectic and spin tomographies

13:00 - 15:00 **LUNCH**

15:00 - 20:00 **BELGRADE SIGHTSEEING TOUR**

SUNDAY, 1 JUNE – RECTORATE Lecture hall 2

Chairman: Allan SOLOMON

- 11:00 **MACOVEI Mihai**
Phase dependent quantum dynamics induced by ultrashort laser pulses
- 11:20 **OGANESYAN Koryun**
The threshold conditions for FELWI
- 11:40 **GLUSHKOV Alexander**
QED theory of radiation emission and absorption lines for plasma atoms, ions and nuclei in a strong laser field. Nuclear quantum optics
- 12:00 **VVEDENSKII Nikolay**
Quantum and semiclassical calculations of quasi-DC current excitation in plasma created by few-cycle laser pulse

13:00 - 15:00 **LUNCH**

15:00 - 20:00 **BELGRADE SIGHTSEEING TOUR**

MONDAY, 2 JUNE – RECTORATE Lecture hall 1

Chairman: Philip WALTHER

- 9:00 **VULETIĆ Vladan**
Single-photon bus between atomic spin-wave quantum memories
- 9:30 **RAUCH Helmut**
Basic quantum irreversibility in neutron interference experiments
- 10:00 **SALOMON Christophe**
Precision time measurement and fundamental physics

10:30 - 11:00 **COFFEE BREAK**

Chairman: Margarita MAN'KO

- 11:00 **MARKO Marton**
Missing Kossel-lines and standing waves in neutron scattering
- 11:20 **FERRARO Elena**
Entanglement collapses and revivals in a spin star system
- 11:40 **JIVULESCU Anastasia**
Exact dynamics of a disordered spin star system
- 12:00 **RADONJIĆ Milan**
Line-shapes and widths of CPT resonances - laser beam profile and atomic polarization effects
- 12:20 **SAMBALE Agnes**
Interaction of an atom with absorbing left-handed media

13:00 - 15:00 **LUNCH**

Chairman: Hrvoje SKENDEROVIĆ

- 15:00 **BRUKNER Caslav**
The quantum to classical transition and the complexity of Schrödinger-cat states
- 15:30 **MAN'KO Vladimir**
Quantum correlations in the probability representation of quantum states
- 16:00 **BAUDON Jacques**
Coherent atom optics with rare gas metastable atoms

16:30 - 17:00 **COFFEE BREAK**

17:00 - 18:30 **POSTER SESSION – Topics : 2, 3, 4, 5, 6, 7, 9, 10**

20:00 - 23:00 **CONFERENCE DINNER**
Restaurant Ušće, Bulevar Ušće bb, New Belgrade

MONDAY, 2 JUNE – RECTORATE Lecture hall 2

Chairman: Saverio PASCAZIO

- 11:00 **LEON Juan**
Entanglement without a common cause?
- 11:20 **SOLOMON Allan**
Quantum entanglement and braid groups
- 11:40 **LASKOWSKI Wieslaw**
Experimentally friendly geometrical criteria for entanglement
- 12:00 **MISTA Ladislav**
Localizable entanglement for continuous variables
- 12:20 **OOI Raymond**
Extended photon correlation in superradiance with negative temperature

13:00 - 15:00 **LUNCH**

TUESDAY, 3 JUNE – RECTORATE Lecture hall 1

Chairman: Helmut RAUCH

- 9:00 **BELLINI Marco**
Generation and tomographic analysis of quantum states of light
- 9:30 **DUCLOY Martial**
Nanoscale quantum optics: nanocavity QED, atomic spectroscopy, etc.
- 10:00 **MARIAN Paulina**
Quantum Chernoff bound as a measure of nonclassicality for Gaussian states

10:30 - 11:00 **COFFEE BREAK**

Chairman: Miroljub DUGIĆ

- 11:00 **MIZRAHI Salomon**
Information theory and quantum mechanics
- 11:20 **MIRANOWICZ Adam**
Entanglement manipulation via a pure state can cause a greater entanglement loss than that via a mixed state
- 11:40 **ANDREEV Vladimir**
Bell inequalities and correlation of spin projection function
- 12:00 **KHETSELIUS Olga**
Laser separation and detecting the isotopes and nuclear reaction products and relativistic calculating the hyperfine structure parameters for heavy-elements

12:30 - 13:00 **CLOSING CEREMONY**

14:00 - 15:00 **LUNCH IN THE INSTITUTE OF PHYSICS**

15:00 - 17:00 **VISIT TO THE INSTITUTE OF PHYSICS**

TUESDAY, 3 JUNE – RECTORATE Lecture hall 2

Chairman: Wojciech GAWLIK

- 11:00 **GAINUTDINOV Renat**
*Interaction of an atom subject to an intense laser field
with Its own radiation field and nonlocality of electromagnetic interaction*
- 11:20 **KLIMOV Vasily**
Detection of spiral photons in quantum optics
- 11:40 **PERINOVA Vlasta**
Propagation of radiation in the state with at most one photon in a dielectric
- 12:00 **MOSZYNSKI Robert**
*Relativistic and QED treatment of long-range resonant interactions between
like atoms*

12:30 - 13:00 **CLOSING CEREMONY**

14:00 - 15:00 **LUNCH IN THE INSTITUTE OF PHYSICS**

15:00 - 17:00 **VISIT TO THE INSTITUTE OF PHYSICS**

Organizing Institutions

Institute of Physics of the University of Belgrade
Serbian Academy of Sciences and Arts

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