Quantum Technologies Conference III

Manipulating photons, atoms, and molecules

Conference Booklet

FACULTY OF PHYSICS
WARSAW UNIVERSITY

September 9 - 15, 2012, Warszawa, Poland

internet access...

There are two wireless internet access points prepared for participants:

1.
Localization: Conference Hall
Network: ifwifi2
Password: QuantumTech

2.
Localization: Canteen Courtyard
Network: qtwifi
Password: QuantumTech

Quantum Technologies Conference III

the conference...

The conference is organized by the **Institute of Physics of the Polish Academy of Sciences**, the **University of Warsaw**, and the **Jagiellonian University** in cooperation with the **Center for Quantum Technologies of Atoms and Light**.

All accepted participants are invited to present a 30 minute talk during the conference.

Scientific Committee

Mariusz Gajda
Institute of Physics of the Polish Academy of Sciences, Warsaw

Maciej Lewenstein
ICFO - Institute of Photonic Sciences, Barcelona

Jan Mostowski
Institute of Physics of the Polish Academy of Sciences, Warsaw

Kazimierz Rzążewski
Center for Theoretical Physics of the Polish Academy of Sciences, Warsaw

Marek Trippenbach
University of Warsaw

Jakub Zakrzewski
Jagiellonian University, Kraków

Conference Chairmen

Mariusz Gajda
Institute of Physics of the Polish Academy of Sciences, Warsaw

Marek Trippenbach
University of Warsaw

Jakub Zakrzewski
Jagiellonian University, Kraków

Organizing Committee

Jan Chwedeńczuk
University of Warsaw

Piotr Deuar
Institute of Physics of the Polish Academy of Sciences, Warsaw

Tomasz Sowiński
Institute of Physics of the Polish Academy of Sciences, Warsaw

September 9 - 15, 2012, Warszawa, Poland

Quantum Technologies Conference III

Monday (morning session)

9.30 - 10.30

Yvan Castin
Ecole Normale Supérieure, Paris
The unitary Fermi gas

10.30 - 11.00

Coffee break

11.00 - 11.30

Ulrich Ebling
ICFO - Institut de Ciencies Fotoniques (Spain)
Spinor dynamics in a multi-component Fermi gas

11.30 - 12.00

Christian Trefzger
Laboratoire Kastler Brossel (France)
An impurity in a Fermi sea on a narrow Feshbach resonance: A variational study of the polaronic and dimeronic branches

12.00 - 12.30

Krzysztof Sacha
Institute of Physics, Jagiellonian University (Poland)
Frustration and time reversal symmetry breaking for Fermi and Bose-Fermi systems

12.30 - 13.00

Bryan Dalton
Centre for Atom Optics & Ultrafast Spectroscopy, Swinburne University, (Australia)
Phase Space Methods for Fermions using Grassmann Variables

13.00 - 14.00

Lunch

Quantum Technologies Conference III

Monday (afternoon session)

14.00 - 15.00

Alice Sinatra

Ecole Normale Supérieure, Paris

Spin squeezing in Bose-Einstein Condensates: from the two-mode model to a multi-mode description

15.00 - 15.30

Coffee break

15.30 - 16.00

Florian Mintert

FRIAS, Uni Freiburg (Germany)

Optimal control with measures optimized on the fly

16.00 - 16.30

Piotr Szankowski

Institute of Theoretical Physics, University of Warsaw (Poland)

Evolution of spins in fluctuating fields

16.30 - 17.00

Michal Tomza

University of Warsaw, University of Kassel (Warsaw)

Engineering multi-photon coherent formation of ultracold rubidium molecules with femtosecond laser pulses

17.00 - 17.30

Krzysztof Pawlowski

Ecole Normale Supérieure (France)

Decoherence in a bosonic Josephson junction

Quantum Technologies Conference III

Tuesday (morning session)

9.30 - 10.30

Tilman Pfau
Universität Stuttgart
Coherent control of dense Rydberg gases

10.30 - 11.00

Coffee break

11.00 - 11.30

Omjyoti Dutta
Institute of Photonic Sciences, Barcelona, Spain (Spain)
Beyond the standard Hubbard models

11.30 - 12.00

David Peter
Institute for Theoretical Physics III, University of Stuttgart (Germany)
Anomalous Behavior of Spin Systems with Dipolar Interactions

12.00 - 12.30

Michal Maik
ICFO (Spain)
Quantum spin models with long-range interactions and tunnelings: A quantum Monte Carlo study

12.30 - 13.00

Tomasz Sowinski
Institute of Physics of the Polish Academy of Sciences (Poland)
One-dimensional Bose-Hubbard model with local three-body interactions

13.00 - 14.00

Lunch

Quantum Technologies Conference III

Tuesday (afternoon session)

14.00 - 15.00

Bruno Laburthe-Tolra
Université Paris-Nord XIII
Dipolar Chromium BECs and magnetism

15.00 - 15.30

Coffee break

15.30 - 16.00

Axel Griesmaier
University of Stuttgart (Germany)
Stability and Collapse of a dipolar Bose-Einstein Condensate in an optical lattice

16.00 - 16.30

Mateusz Lacki
Jagiellonian University (Poland)
Higher Bloch bands in optical lattices

16.30 - 17.00

Emilia Witkowska
IF PAN (Poland)
Double universality of a quantum phase transition in spinor condensates

17.00 - 17.30

Tomasz Wasak
Faculty of Physics, University of Warsaw (Poland)
Quantum model for twin-beam experiment

Quantum Technologies Conference III

Wednesday (morning session)

9.30 - 10.30

Christoph Westbrook
Université Paris-Sud XI
Acoustic analog of the dynamical casimir effect in a BEC

10.30 - 11.00

Coffee break

11.00 - 11.30

Uwe R. Fischer
Seoul National University (Korea)
Out-of-Equilibrium Microscopes for Quantum Many-Body States

11.30 - 12.00

Piotr Deuar
Institute of Physics, Polish Academy of Sciences (Poland)
Violation of the Cauchy-Schwarz inequality with matter waves

12.00 - 12.30

Przemyslaw Bienias
Center for Theoretical Physics PAS (Poland)
Quasi-1D Bose gas revisited

12.30 - 13.00

Tomasz Karpiuk
Wydzial Fizyki, Uniwersytet w Bialymstoku (Poland)
Spontaneous solitons in the thermal equilibrium of a quasi-one-dimensional Bose gas

13.15

Conference photo

13.30 -

Garden party

Quantum Technologies Conference III

Thursday (morning session)

9.30 - 10.30

Masahito Ueda
The University of Tokyo
Topological excitations in ultracold atoms

10.30 - 11.00

Coffee break

11.00 - 11.30

Veronica Ahufinger
Universitat Autonoma de Barcelona (Spain)
Storage and processing of polarization qubits in three-level media

11.30 - 12.00

Axel U. J. Lode
Heidelberg University (Germany)
Insights on the Many-Body Physics of Tunneling from Numerically Exact Solutions of the Time-Dependent Schrodinger Equation for Ultracold Bosons

12.00 - 12.30

Malgorzata Mochol
Instytut Fizyki, Uniwersytet Jagielloński w Krakowie (Poland)
Dark soliton in a disorder potential

12.30 - 13.00

Tomasz Gorski
Department of Theoretical Physics and Computer Science, University of Lodz (Poland)
Statistics of population difference for cold bosons and fermions in a double well potential

13.00 - 14.00

Lunch

Quantum Technologies Conference III

Thursday (afternoon session)

14.00 - 15.00

Paul Julienne
NIST, USA
Quantum control of ultracold atomic and molecular phenomena

15.00 - 15.30

Coffee break

15.30 - 16.00

Krzysztof Jachymski
University of Warsaw (Poland)
Collisions of reactive molecules from ultracold domain to classical limit

16.00 - 16.30

Mariusz Semczuk
University of British Columbia (Canada)
Towards Li2 and LiRb ground state molecules

16.30 - 17.00

Michal Krych
University of Warsaw (Poland)
Reactive collisions of polar molecules with high dipole moments in quasi-2d traps

17.00 - 17.30

Isam Manai
Universitat Paris-Sud XI (France)
Rovibrational cooling of molecules by optical pumping

Quantum Technologies Conference III

Friday

9.30 - 10.30

Klaus Sengstock
Universität Hamburg
Magnetism without magnetism

10.30 - 11.00

Coffee break

11.00 - 11.30

Alessio Celi
ICFO (Spain)
Quantum simulation of an extra dimension

11.30 - 12.00

Jeremie Gillet
University College Cork (Ireland)
Tunneling, self-trapping and manipulation of higher modes of a BEC in a double well

12.00 - 12.30

Michal Matuszewski
Institute of Physics, Polish Academy of Sciences (Poland)
Supersolidity of excitons

12.30 - 13.00

Juan Jose Garcia-Ripoll
Instituto de Fisica Fundamental, CSIC (Spain)
Propagating microwave photons in superconducting circuits

13.00 - 14.00

Lunch

14.00 - 14.30

Bjorn Bartels
Freiburg Institute for Advanced Studies, University of Freiburg (Germany)
Quantum Coherence via Smooth Optimal Control

14.30 - 15.00

Remigiusz Augusiak
ICFO-The Institute of Photonic Sciences (Spain)
Bell inequalities with no quantum violation and unextendable product bases