

CONTINUATION

THURSDAY, MARCH 4, 2010

- 14:30–15:15 **TOBIAS FRITZ**
Curious properties of iterated measurements
- 15:15–16:00 **MADALIN GUTA**
Local asymptotic normality for independent states and quantum Markov chains
- 16:00–16:30 COFFEE BREAK
- 16:30–17:15 **LAURENT SANCHEZ PALENCIA**
Many-body Anderson localization in interacting Bose gases
- 17:15–18:00 **JOSHUA BODYFELT**
One parameter scaling theory for stationary states of disordered nonlinear systems

FRIDAY, MARCH 5, 2010

- 09:00–9:45 **JEROEN WOUTERS**
Correlations in free fermionic states
- 09:45–10:30 **MARCUS CRAMER**
State reconstruction from few measurements
- 10:30–11:00 COFFEE BREAK
- 11:00–11:45 **MALTE TICHY**
Quantum statistical synchronization of non-interacting particles
- 11:45–12:30 **DAMIAN MARKHAM**
Entanglement symmetry of permutation symmetric states

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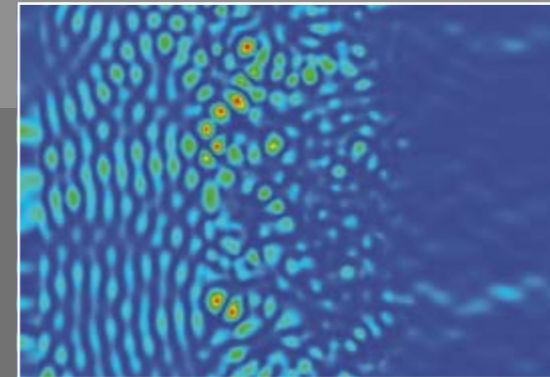
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Weiterführende Hinweise:

www.haw.uni-heidelberg.de/forschung/2009-qsc.de.html

New Perspectives in Quantum Statistics and Correlations



Akademiekonferenz
für junge Wissenschaftler



HEIDELBERGER AKADEMIE
DER WISSENSCHAFTEN

Akademie der Wissenschaften des Landes Baden-Württemberg

New Perspectives in Quantum Statistics and Correlations

Akademiekonferenz für junge Wissenschaftler /
Academy-conference for young scientists

Ort: Akademie der Wissenschaften
Karlstraße 4, Heidelberg

Datum: 1. bis 5. März 2010 / *March 1 to 5 2010*

Beginn: 1. März 2010, 9:15 Uhr / *March 1 2010*

Während der letzten Jahrzehnte hat das theoretische Verständnis einzelner Quantensysteme, z.B. einzelner Atome oder Ionen, wie auch die experimentellen Möglichkeiten zu deren Manipulation ein noch nie dagewesenes Niveau erreicht. Neue Herausforderungen stellt die Charakterisierung von Korrelationen zwischen einzelnen Quantensystemen dar.

Statistische Zugänge zur Beschreibung von Korrelationen sind in vielen Zweigen der Quantenphysik und Mathematik etabliert. Verschiedene Begriffe und Betrachtungsweisen an sich gemeinsamer Konzepte sind in diversen, scheinbar voneinander getrennten Forschungsfeldern entstanden. Ziel der Konferenz ist es, Brücken zwischen diesen Forschungsgebieten zu schlagen und dabei Wissenschaftler verschiedener Generationen zusammenzuführen.

During the last decades, the theoretical understanding of single quantum systems, such as single ions or atoms, as well as the experimental ability to manipulate them, has reached an unprecedented level. New challenges emerge for the characterization of correlations between individual quantum systems. Statistical approaches to capture such correlations have been established in numerous branches of quantum physics and mathematics. Different notions and perspectives on common ideas have developed in different, seemingly disjoint communities. The aim of the conference is to establish bridges among these communities, bringing together both young and experienced scientists.

Veranstaltet von / Organised by:

- Celsus Bouri, Albert-Ludwigs-Universität Freiburg
- Moritz Hiller, Albert-Ludwigs-Universität Freiburg
- Fernando de Melo, Katholieke Universiteit Leuven
- Florian Mintert, Albert-Ludwigs-Universität Freiburg
- Peter Pickl, Eidgenössische Technische Hochschule Zürich
- Thomas Wellens, Albert-Ludwigs-Universität Freiburg
- Sandro Wimberger, Ruprecht-Karls-Universität Heidelberg

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PROGRAM



MONDAY, MARCH 1, 2010

- 09:15–9:45 **WELCOME**
WOLFGANG SCHLEICH
Sekretar der Mathematisch-naturwissenschaftlichen Klasse der HAW
CHRISTIAN ENSS
Dekan der Fakultät für Physik und Astronomie der Universität Heidelberg
- 09:45–10:30 **MICHAEL WOLF**
New takes on Bell's inequalities
- 10:30–11:00 **COFFEE BREAK**
- 11:00–11:45 **ANTONIO ACÍN**
Quantum correlations and device-independent quantum information protocols
- 11:45–12:30 **JOHN CALSAMIGLIA**
Entanglement percolation in quantum complex networks
- 12:30–14:30 **LUNCH BREAK**
- 14:30–15:15 **ANA MARIA REY**
Two-orbital SU(N) magnetism with ultracold alkaline-earth atoms
- 15:15–16:00 **CHRISTIAN GROSS**
Spin squeezing and nonlinear interferometry with an ultra-cold quantum gas
- 16:00–16:30 **COFFEE BREAK**
- 16:30–17:15 **DOMINIQUE DELANDE**
Anderson localization and metal-insulator Anderson transition with cold atomic gas
- 17:15–18:00 **SHMUEL FISHMAN**
Anderson localization for the nonlinear Schrödinger equation (NLSE): results and puzzles
- 18:30 **RECEPTION**

TUESDAY, MARCH 2, 2010

- 09:00–9:45 **KLAUS RICHTER**
Classical orbit correlations: the key for understanding universality in quantum chaotic systems
- 09:45–10:30 **THOMAŽ PROSEN**
Quantum phase transitions far from equilibrium and wave billiards
- 10:30–11:00 **COFFEE BREAK**
- 11:00–11:45 **REINHARD DÖRNER**
Electron entanglement in photoionization of small molecules
- 11:45–12:30 **JÖRG EVERS**
Generation of x-ray single photon entanglement via coherent control of nuclei
- 12:30–14:30 **LUNCH BREAK**
- 14:30–15:15 **JIANMING CAI**
Quantum computation in correlation space and extremal entanglement
- 15:15–16:00 **N. N.**
- 16:00–16:30 **COFFEE BREAK**
- 16:30–18:00 **POSTER**
- MARTÍ CUQUET**
Entanglement percolation in quantum complex networks
- DENIS GONTA**
Generation of two-dimensional cluster states using bimodal cavities
- TIMO HARTMANN**
Transport and weak localisation of Bose-Einstein condensates in two-dimensional billiards

- GEORGE KORDAS**
Time Evolution via Path Integrals in Open Systems
- YEONG-CHERNG LIANG**
Prevalence of nonclassical correlations in quantum resources
- PIERRE LUGAN**
Quantum states of ultracold, interacting Bose gases in 1D random potentials
- PATRICK PLÖTZ**
Fidelity, avoided crossings, and quantum chaos
- ŁUKASZ RUDNICKI**
Entropy, information and the uncertainty of measurements
- KASPAR SAKMANN**
Exact quantum dynamics of a Bosonic Josephson junction
- MARTIN STRZYS**
Second Josephson oscillations
- QURRAT UL-AIN**
Retardation effects on entanglement between atoms in a cavity
- HARALD WUNDERLICH**
Quantifying entanglement from scattering data

WEDNESDAY, MARCH 3, 2010

- 09:00–9:45 **JAKOB YNGVASON**
Bosons in rapid rotation
- 09:45–10:30 **DAVID CLEMENT**
Probing correlated lattice bosons by inelastic light scattering
- 10:30–11:00 **COFFEE BREAK**

- 11:00–11:45 **DIRK WITTHAUT**
Dissipation induced coherence of a two-mode Bose-Einstein condensate
- 11:45–12:30 **GHAZAL TAYEBIRAD**
Enhancement and suppression of the Landau-Zener tunneling in the presence of time-dependent disorder
- 12:30–14:30 **LUNCH BREAK**
- 14:30–15:15 **HOLGER HENNIG**
Avalanches of Bose-Einstein condensates in leaking optical lattices: transfer of ultracold atoms through discrete breathers
- 15:30–18:00 **CITY TOUR**
- 20:00 **CONFERENCE DINNER**

THURSDAY, MARCH 4, 2010

- 09:00–9:45 **BENJAMIN SCHLEIN**
Effective evolution equations for many body quantum systems
- 09:45–10:30 **ANDREI KHRENNIKOV**
Representation of quantum correlations for entangled systems as classical field correlations
- 10:30–11:00 **COFFEE BREAK**
- 11:00–11:45 **OLIVER MÜLKEN**
On the coherent aspects of excitonic energy transfer
- 11:45–12:30 **TORSTEN SCHOLAK**
Entanglement-enhanced energy transfer
- 12:30–14:30 **LUNCH BREAK**