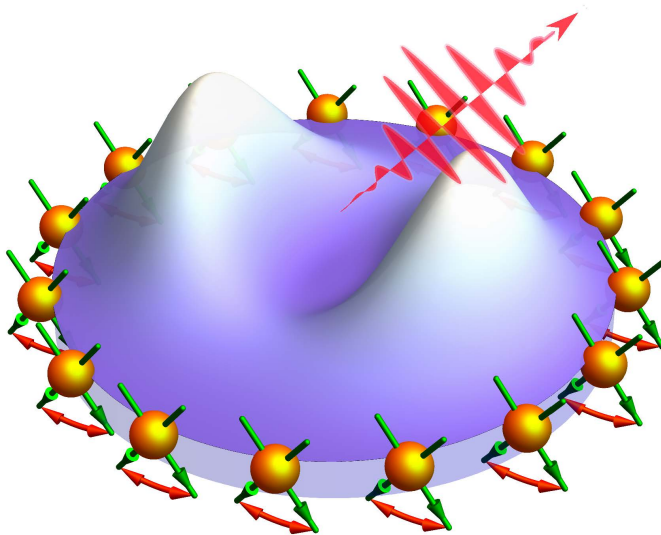


International Workshop
17 - 21 June 2019

Engineering Nonequilibrium Dynamics of Open Quantum Systems

PROGRAM



Scientific coordinators:

Adolfo del Campo • Ikerbasque & Donostia International Physics Center, Spain
Martin B. Plenio • Ulm University, Germany
Armin Rahmani • Western Washington University, USA

Organisation:

Maria Voigt • MPIPKS, Germany



Max-Planck-Institut für Physik komplexer Systeme
Nöthnitzer Str. 38, D-01187 Dresden
Tel.: +49-351-871-1932 / Fax: +49-351-871-2199
Email: dynqos19@pks.mpg.de
Internet: <http://www.pks.mpg.de/dynqos19>



The program will be continuously updated during the event. This
Version was printed on June 20, 2019

Program

Sunday, 16 June

- | | |
|---------------|--|
| 18:00 - 20:00 | Registration at guest house 4, library |
| 19:00 - 21:00 | Welcome reception and dinner at the MPIPKS |
| 20:00 - 21:30 | Informal discussions |

Monday, 17 June

09:00 - 09:15

**Holger Kantz (MPIPKS) &
scientific coordinators**

Opening

Chair morning session: Adolfo del Campo

09:15 - 10:00

Aurelia Chenu

(Donostia International Physics Center)
Controlling decoherence using stochastic
Hamiltonians

10:00 - 10:30

Coffee break

10:30 - 11:15

Eric Lutz (University of Stuttgart)

Irreversibility and the quantum arrow of time

11:15 - 12:00

Fedor Jelezko (Ulm University)

Quantum sensing with defects

12:00 - 13:00

Lunch break

13:00 - 14:15

Discussions

Chair afternoon session: Luis Pedro García-Pintos

14:15 - 14:45

Steve Campbell (Trinity College Dublin)

Comparing the cost of quantum control

14:45 - 15:30

Ryusuke Hamazaki (The University of Tokyo)

Localization and universality in non-Hermitian many-
body systems

15:30 - 16:00

Zhenyu Xu (Soochow University Suzhou)

Extreme decoherence and quantum chaos

16:00 - 16:30	Coffee break
	<i>Chair dynqos19-colloquium: Aline Ramires (MPIPKS)</i>
16:30 - 17:30	dynqos19-colloquium: Susana F. Huelga (Ulm University) The formalism of open quantum systems and its application to quantum metrology
17:30 - 18:00	Discussions
18:00 - 18:45	Tomaž Prosen (University of Ljubljana) Exact correlation functions for dual unitary lattice models in 1+1 dimensions
18:45 - 19:00	Discussions
19:00 - 20:00	Dinner
20:00 - 21:00	Informal discussions

Tuesday, 18 June

Chair morning session: Aurelia Chenu

09:15 - 10:00 **Sahar Alipour** (Aalto University)
Correlation picture approach to open quantum system dynamics

10:00 - 10:30 Coffee break

10:30 - 11:15 **Ines de Vega**
(Ludwig-Maximilians University Munich)
Quantum emitters in anharmonic environments

11:15 - 12:00 **Igor Lesanovsky** (University of Nottingham)
Kinetically constrained Rydberg gases -
Non-equilibrium processes in continuous and discrete time

12:00 - 13:00 Lunch break

13:00 - 14:00 Discussions

Chair afternoon session: Uwe R. Fischer

14:00 - 14:45 **Miguel A. Martin-Delgado**
(Universidad Complutense de Madrid)
Symmetry-protected topological orders at finite temperature

14:45 - 15:30 **Anatoli Polkovnikov** (Boston University)
Design and implementation of a counter-diabatic protocol in an open system

15:30 - 16:00 **Pieter W. Claeys** (Boston University)
Floquet-engineering counterdiabatic protocols in quantum many-body systems

16:00 - 16:30	Coffee break <i>Chair late afternoon session: Sahar Alipour</i>
16:30 - 17:00	Kartiek Agarwal (McGill University Montreal) Polyfractal driving for engineering Hamiltonians and symmetries
17:00 - 17:30	Luis Correa (University of Exeter) Classical emulation of quantum-coherent thermal machines
17:30 - 18:00	Pablo Poggi (University of New Mexico, Albuquerque) Reliability of analog quantum simulation in the presence of imperfections: quantum critical systems and chaos
18:00 - 19:00	Discussions
19:00 - 20:00	Dinner
20:00 - 21:00	Poster Session I (focus on odd poster numbers)

Wednesday, 19 June

Chair: Armin Rahmani

- 09:30 - 10:00 **Anja Metelmann** (Free University Berlin)
Entanglement generation in nonreciprocal systems
via dissipation engineering
- 10:00 - 10:10 Group photo
(to be published on the event's web page)
- 10:10 - 10:30 Coffee break
- 10:30 - 11:15 **Juan José García-Ripoll**
(CSIC - Institute of Fundamental Physics)
Quantum microwave photonics
- 11:15 - 12:00 **Rosario Fazio** (International Centre for
Theoretical Physics Trieste)
Boundary time crystals
- 12:00 - 13:00 Lunch break
- 13:00 - 14:00 Discussions
- 14:00 Departure for the guided tours by tram from the
institute (meeting point: reception of MPIPKS)
- 14:30 - 18:00 a guided walking tour through Dresden's old town
and Neustadt **OR**
a guided walking art tour through Dresden Neustadt
and several ateliers of contemporary artists
- 18:00 - 21:00 Menu-dinner at the restaurant "lila Soße",
Alaunstrasse 70 (Tel.: +49 351 8036723)

Thursday, 20 June

Chair morning session: Ines de Vega

09:15 - 10:00 **James Wootton** (IBM Research - Zurich)
Benchmarking quantum processors with quantum error correction

10:00 - 10:30 Coffee break

10:30 - 11:15 **Howard Carmichael** (University of Auckland)
Monitored quantum jumps: the view from quantum trajectory theory

11:15 - 12:00 **Lorenza Viola** (Dartmouth College)
Qubit sensors in correlated quantum noise environments: from noisy quantum metrology to quantum noise spectroscopy

12:00 - 13:00 Lunch break

13:00 - 14:00 Discussions

Chair afternoon session: Thomas Barthel

14:00 - 14:30 **Luis Pedro García-Pintos**
(University of Massachusetts, Boston)
Spontaneous symmetry breaking induced by quantum monitoring

14:30 - 15:00 **Andrea Smirne** (Ulm University)
Nonperturbative method for non-Markovian quantum dynamics

15:00 - 15:30 **Mark Mitchison** (Trinity College Dublin)
Quantum thermodynamics with quasiperiodic systems

Program

- 15:30 - 16:00 **Durga B Rao Dasari** (Max Planck Institute for Solid State Research & University of Stuttgart)
Non-classical measurement statistics induced by a coherent spin environment
- 16:00 - 16:30 Coffee break
- Chair late afternoon session: Pieter W. Claeys*
- 16:30 - 17:00 **Ali Tayefeh Reza khani**
(Sharif University of Technology, Tehran)
Detailed balance and fluctuation relations in quantum thermodynamics
- 17:00 - 17:30 **Babak Seradjeh** (Indiana University, Bloomington)
Higher-order Floquet topological phases with corner and bulk bound states
- 17:30 - 19:00 Discussions
- 19:00 - 20:00 Dinner
- 20:00 - 21:00 Poster session II (focus on even poster numbers)

Friday, 21 June

Chair morning session: Adolfo del Campo

09:30 - 10:00

Alvaro Alhambra

(Perimeter Institute for Theoretical Physics)
Dynamics of two-point correlation functions in quantum many-body systems

10:00 - 10:30

Coffee break

10:30 - 11:00

Uwe R. Fischer (Seoul National University)
Autonomous quantum error correction by strong engineered dissipation and the Knill-Laflamme condition

11:00 - 11:30

Brendon Lovett (University of St. Andrews)
Efficient non-Markovian quantum dynamics using time-evolving matrix product operators

11:30 - 12:00

Ken Funo (RIKEN Cluster for Pioneering Research)
Speed limit for open quantum systems

12:00 - 13:00

Lunch break

13:00 - 13:15

Closing & departure

Chair discussion session: Alvaro Alhambra

13:15 - 16:00

Discussions