



Agenda

Workshop Entanglement in Quantum Fields

IWH Heidelberg (Germany), 28-30 June 2021

Monday, 28 June 2021

08:45 – 09:00	WELCOME
09:00 – 10:30	LECTURE Juan Ignacio Cirac (MPQ Garching) <i>Tensor Networks and Quantum Field Theories</i>
10:30 – 11:00	COFFEE BREAK
11:00 – 11:30	Mari Carmen Bañulus (MPQ Garching) <i>TNS for lattice gauge theories: numerical strategies beyond 1D</i>
11:30 – 12:00	Jordi Tura (Leiden University) <i>Certificates of many-body properties assisted by machine learning</i>
12:00 – 12:30	Natalia Sánchez-Kuntz (Heidelberg University) <i>Interaction as a UV-regulator for entanglement in Bose-Einstein condensates</i>
12:30 – 14:00	LUNCH BREAK
14:00 – 15:30	LECTURE Marcus Huber (University of Vienna) <i>Entanglement beyond qubits</i>
15:30 – 16:00	COFFEE BREAK
16:00 – 16:30	James Schneeloch (Airforce Research Laboratory, Rome, NY) <i>The Entanglement-Correlation Connection: Entropic workarounds to cutting-edge quantum characterization</i>
16:30 – 17:00	Bjarne Bergh (University of Cambridge) <i>Lower bounding entanglement in quantum many-body systems using entropic uncertainty relations</i>
17:00 – 17:30	Marek Gluza (FU Berlin) <i>Tomography and non-equilibrium dynamics in a continuous field quantum simulator</i>

WLAN-Access: UNI-WEBACCESS / ID: i5n / Password: 8x7wir15

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- 09:00 – 10:30** **LECTURE**
Christian Kokail (Innsbruck University)
Characterizing Quantum Many-Body States via Entanglement Hamiltonian Tomography
- Andreas Elben (Innsbruck University)**
Entanglement detection with randomized measurements
- 10:30 – 11:00** **COFFEE BREAK**
- 11:00 – 11:30** **Philipp Preiss (Heidelberg University)**
Correlations and Entanglement in Microscopic Samples of Ultracold Fermions
- 11:30 – 12:00** **Nicolai Friis (Vienna University)**
Activation of genuine multipartite entanglement: beyond the single-copy paradigm of entanglement characterisation
- 12:00 – 12:30** **Guiseppe Vitagliano (Vienna University)**
Spin squeezing and entanglement quantification in spin-j atomic gases
- 12:30 – 14:00** **LUNCH BREAK**
- 14:00 – 15:30** **LECTURE**
Pasquale Calabrese (SISSA Trieste)
Entanglement and symmetry in extended quantum systems
- 15:30 – 16:00** **COFFEE BREAK**
- 16:00 – 16:30** **Tobias Haas (Heidelberg University)**
Entropic entanglement criteria in phase space
- 16:30 – 17:00** **Oliver Stockdale (Heidelberg University)**
Entanglement detection via entropies in spinor Bose gases
- 17:00 – 17:30** **Manuel Gessner (ENS Paris)**
Detecting entanglement with tools from metrology



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Wednesday, 30 June 2021

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|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 09:00 – 10:30 | LECTURE
Ottfried Gühne (Siegen University)
<i>Characterizing Quantum Correlations with Randomized Measurements</i> |
| 10:30 – 11:00 | COFFEE BREAK |
| 11:00 – 11:30 | Irène Frèrot (ICFO Barcelona)
<i>Statistical physics empowers quantum information: scalable methods for entanglement detection in multipartite systems</i> |
| 11:30 – 12:00 | Jean-Daniel Bancal (Université Paris-Saclay)
<i>Entanglement for any definition of two subsystems</i> |
| 12:00 – 12:30 | Matteo Fadel (University of Basel)
<i>Einstein-Podolsky-Rosen steering as a resource for quantum metrology</i> |
| 12:30 – 14:00 | LUNCH BREAK |
| 14:00 – 15:30 | LECTURE
Johanna Erdmenger (Würzburg University)
<i>Quantum entanglement and black holes</i> |
| 15:30 – 16:00 | COFFEE BREAK |
| 16:00 – 16:30 | Stefan Lannig (Heidelberg University)
<i>Experimental Simultaneous Extraction of Non-Commuting Observables for Accessing Quantum Correlations in a Spinor Bose-Einstein Condensate</i> |
| 16:30 – 17:00 | Philipp Kunkel (Stanford University)
<i>Programmable Interactions and Emergent Geometries in an Atomic Array</i> |