



The Abdus Salam
International Centre
for Theoretical Physics



Workshop on Quantum Simulators of the Future: From Dynamical Gauge Fields to Lattice Gauge Theories

Description:

Quantum simulators are the systems that can address, deepen our understanding of, and ultimately solve challenging problems of contemporary science: from quantum many body dynamics, to the design of new materials.

MORE DETAILS:

This Workshop will gather world-leading groups that design, realize experimentally, and characterize a new generation of simulators with ultracold atoms and beyond. In particular, we will focus on novel quantum simulators in ascending degree of experimental complexity: 1) systems where density-dependent gauge fields can change the effective quantum statistics of the particles and realize topological gauge theories; 2) systems in dynamical lattices, with “matter” living on the sites, and dynamical fields/particles living on the bonds, which can be numerically benchmarked using tensor network techniques; and 3) lattice gauge theory models, from systems with Abelian to non-Abelian local gauge symmetry.

TOPICS:

- Analog and digital quantum simulation of Gauge Theories.
- Tensor Network methods in Lattice Gauge Theories
- Cold-atom simulators for Gauge Fields

SPEAKERS:

Monika AIDELSBURGER

LMU Germany

Mari Carmen BAÑULS

MPQ, Germany

Titas CHANDA

IIT Indore, India

Panos CHRISTODOULOU

ETH, Switzerland

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Federica SURACE

Caltech, USA

Bing YANG

Southern University of Science and

Technology, China

Jakub ZAKRZEWSKI

JZ Jagiellonian University, Poland



20 - 22 February 2024



Trieste, Italy



Application and Deadlines:

15 November 2023

For those asking for financial and/or VISA support.

1 December 2023

For those not asking for support.

DIRECTORS:

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LOCAL ORGANISER:

M. DALMONTE, (ICTP)

GRANTS:

A limited number of grants are available to support the attendance of selected participants, with priority given to participants from developing countries.

There is no registration fee.

FURTHER INFORMATION:



E-mail: smr3922@ictp.it

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Female scientists are encouraged to apply.

This project was funded within the QuantERA II Programme that has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 101017733

