



International Centre for Theoretical Physics  
South American Institute for Fundamental Research

**Campus of IFT-UNESP - São Paulo, Brasil**

**June 26 – July 7, 2023**

**SCHOOL ON EMERGENT  
PHENOMENA IN  
NON-EQUILIBRIUM QUANTUM  
MANY-BODY SYSTEMS**



**HANNES BERNIEN**  
**U. of Chicago, USA**  
*Quantum Information Processing  
and Simulation with Rydberg  
Atom Arrays*



**SEBASTIAN DIEHL**  
**U. of Cologne, Germany**  
*Driven Open Quantum Systems  
— from Micro- to Macrophysics*



**DARRICK CHANG**  
**I. of Photonic Sciences – ICFO, Spain**  
*Atom-Light Interactions as  
a Dissipative Spin Model*



**JOAQUIN RODRIGUEZ-NIEVA**  
**Stanford U., USA**  
*Universal Prethermal Dynamics in  
Quantum Magnets and Fracton Fluids*



**MARCELLO DALMONTE**  
**ICTP-Trieste, Italy**  
*Quantum Simulation of  
Lattice Gauge Theories*

The design of quantum many-body states which elude conventional thermodynamics has become a reality in a number of experimental platforms operating in the far-from-equilibrium regime. This school will gather key experts working on non-equilibrium dynamics ranging from driven open systems to AMO platforms, encompassing interdisciplinary boundaries with high energy physics.

The goal of the school is to provide education both at the basic and advanced level on mainstream themes in current research on non-equilibrium quantum many body systems: (1) dissipative engineering of quantum correlated states at the interface of AMO and solid state; (2) perspectives on theoretical progress in quantum many body information to advance the field beyond the noisy intermediate scale quantum (NISQ) device age; (3) modern ultracold atoms and quantum optics simulators; (4) connections from condensed matter and high energy physics (in particular holography) in the study of scrambling dynamics of quantum information. Our aim is to provide a strong starting package to students interested in taking their first steps in the blossoming research area of quantum many-body dynamics.

There is no registration fee and limited funds are available for travel and local expenses.

**Application deadline: April 16, 2023**

**Online application and more information:  
[www.ictp-saifr.org/neq2023](http://www.ictp-saifr.org/neq2023)**



**ORGANIZERS**

**Rosario Fazio** (ICTP-Trieste, Italy)

**Fernando Lemini** (UFF, Brazil)

**Jamir Marino** (JGU Mainz, Germany)

**Mohammad Ali Rajabpour** (UFF, Brazil)

**ICTP-SAIFR STEERING COMMITTEE**

- Atish Dabholkar - ICTP director
- Pasqual Barretti - UNESP rector
- Luiz Eugênio Mello - FAPESP scientific director
- Hugo Aguilaniu - President-Director of Serrapilheira I.
- Luiz Davidovich (representing Acad. Brazilian of Science)
- Juan Maldacena - Representing South America

**ICTP-SAIFR SCIENTIFIC COUNCIL**

- Michael Green (chair) - U. of Cambridge
- Rosario Fazio - ICTP representative
- Alexandre Reily Rocha - IFT-UNESP director
- William Biialek - Princeton U.
- Eduardo Fradkin - U. Illinois
- Gabriela González - LIGO, Louisiana State U.
- André de Gouvêa - Northwestern U.
- Karen Hallberg - Balseiro Inst., Bariloche
- Luis Lehner - Perimeter Inst., Waterloo
- Gabriel Mindlin - Univ. de Buenos Aires

**ICTP-SAIFR STAFF**

- Nathan Berkovits - Director
- Rogério Rosenfeld - Vice-Director
- Pedro Vieira - Perimeter-SAIFR Coordinator
- Jandira Oliveira - Executive Manager
- Humberto Neto - Executive Secretary
- Lilía Faria - Financial Manager
- Marrey Peres, Jr. - Operations Manager
- Malena Stariolo - Science Journalist
- Tiago Codinhoto - Technical Assistant