



ICTP | International Centre for Theoretical Physics
SAIFR | South American Institute for Fundamental Research

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November 03 – 14, 2025

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

This two-week school is aimed at Master's and PhD students interested in the dynamics of quantum many-body systems, with a focus on both foundational concepts and modern theoretical tools. The program will begin with an introduction to many-body statistical mechanics and the equilibrium physics of systems with short- and long-range interactions, setting the stage for an in-depth exploration of non-equilibrium dynamics, thermalization, and ergodicity. The school will provide a hands-on overview of key analytical approaches, including field-theoretical techniques, semiclassical methods, and the physics of disordered systems, including many-body localization, emergent integrability, and driven-dissipative systems. Our program covers also a quick introduction to modern experimental platforms where quantum many body dynamics is nowadays routinely explored, encompassing cavity QED and trapped ions experiments.

A highlight of the program will be two special guest lectures by Subir Sachdev (Harvard University), offering insights into quantum criticality and emergent phenomena in strongly correlated systems. Lectures will be complemented by interactive discussions and problem sessions, creating an environment that fosters both learning and collaboration.

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

Application deadline: August 3, 2025

Online application and more information:
ictp-saifr.org/neq2025



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