



From
08
JAN.
2024
to
22
MAR.
2024

08h30
-
20h30

2024-T1 QUANTUM MANY-BODY SYSTEMS OUT-OF-EQUILIBRIUM

Quantum many-body systems out-of-equilibrium, Paris

IHP
Amphitheater Hermite / Darboux
11, Rue Pierre et Marie Curie
75005 Paris

INSCRIPTION

Thematic trimester program at Institut Henri Poincaré, Paris

Quantum many-body systems out-of-equilibrium

January 8th to March 22nd, 2024 - IHP, Paris

Thematic program with short courses, seminars and workshops

URL of the page: <https://www.ihp.fr/en/events/quantum-many-body-systems-out-equilibrium-paris>

Presentation of the trimester

The theoretical study of quantum many-body systems is a challenging task due to the amazing complexity induced by the huge number of degrees of freedom of these systems. Equilibrium properties of such systems have been deeply studied in the last decades. In particular, at one-dimension, it is possible for some systems to have access to exact solutions, for instance, within Bethe Ansatz methods. Where exact solutions are not accessible, it is possible to use field theoretical approaches or numerical techniques. Even if, formally, it is possible to have exact solutions both at zero and finite temperature, the case of finite (low) temperature can be exceptionally complicated for quantum mixtures, where one should solve an infinite number of coupled equations following a Bethe Ansatz scheme. Although equilibrium at zero temperature is an ideal situation, most of the physical systems are out-of-equilibrium and/or at finite temperature. Indeed in the last years, several communities have concentrated their effort in the study of quantum many-body systems out-of-equilibrium, both close and open. From the mathematical point of view, a lot of progress has been made recently regarding the asymptotic expansion of the many-body Schrödinger equation in macroscopic limits (correlation energies, quantum fluctuations...). Important challenges remain, in particular as regards applications to scaling limits most relevant for experiments, such as the so-called Gross-Pitaevskii limit for bosons.

The aim of this trimester is to give the possibility to the scientists of these different communities to meet, share their advances, create new collaborations and make theoretical frames and mathematical tools progress.

Confirmed participants:

- Roberta Citro (Salerno University)
- Eugene Demler (ETH Zurich)
- Fabian Essler (University of Oxford)
- Dima Gangardt (University of Birmingham)
- Yval Gefen (Weizmann Institute)
- Giuseppe Mussardo (SISSA - Trieste)
- Maxim Olshanii (University of Massachusetts)
- Tomaz Prosen (Université de Ljubljana)
- Marzena Szymanska (University College London)
- Andrea Trombettoni (SISSA - Trieste)

[Back to the thematic trimester main page](#)

Introductory School:

November 26th to December 2nd, 2023:

[Quantum many-body systems out-of-equilibrium](#)

URL of the page: <https://www.ihp.fr/en/events/quantum-many-body-systems-out-equilibrium-paris>

Workshops:

February 5th to 9th: Quantum Simulators (IHP, Paris)

March 18th to 20th: Driven Quantum Systems (IHP, Paris)

Organizing committee:

- **Rosario Fazio** (ICTP)
- **Thierry Giamarchi** (University of Geneva)
- **Anna Minguzzi** (University Grenoble-Alpes, CNRS)
- **Patrizia Vignolo** (University Côte d'Azur, CNRS)

Scientific committee:

- **Jean-Sébastien Caux** (Amsterdam)
- **Jakob Yngvason** (Vienna)
- **Corinna Kollath** (Bonn, Germany)
- **Maciej Lewenstein** (Barcelona, Spain) *
- **Maxim Olshanii** (Boston, USA)
- **Marcos Rigol** (Philadelphia, USA)
- **Päivi Törmä** (Aalto University)
- **Nikolaj Thomas Zinner** (Aarhus University)

* to be confirmed



INSTITUT HENRI POINCARÉ

Sorbonne Université / CNRS
11 rue Pierre et Marie Curie
75231 Paris Cedex 05

TIMETABLE

The institute:

- Monday to Friday from 8:30am to 6pm,
- closed on public holidays.

The museum - Maison Poincaré :

- Monday, Tuesday, Thursday and Friday from 9:30am to 5:30pm,
- Saturday from 10am to 6pm,
- closed on Wednesday and Sunday.