

# QUANTUM MANY-BODY DYNAMICS: THERMALIZA- TION AND ITS VIOLATIONS

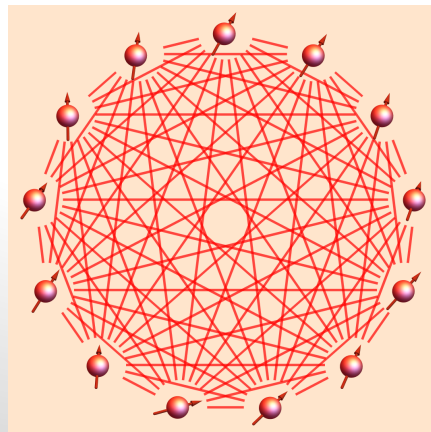
INTERNATIONAL WORKSHOP

May 24 — May 28, 2021

How isolated quantum systems approach and reach equilibrium and thermalization constitutes a long-standing question, which goes back to the very early days of quantum mechanics. Unitary time evolution indeed seems to put severe limitations on the possibility for a closed quantum system to reach thermal equilibrium. This tension is usually solved by means of the celebrated *Eigenstate Thermalization Hypothesis* (ETH) which ultimately allows for local observables to thermalize their expectation values. The intuition behind ETH strongly relies on random matrix theory. Consequently, this creates a natural connection between the physics of thermalization and the theory of many-body quantum chaos. At the same time, another active line of research is devoted to find ways that quantum many-body systems can exploit to avoid thermalization. Among this line of investigation, quantum many-body scars and many-body localization have so far proved to be very promising directions to explore. The aim of this workshop is to bring together leading experts from all these mentioned fields, to provide an overview of the most recent results and techniques.

## Topics include:

- ▶ Many-body quantum chaos and scrambling
- ▶ Thermalization
- ▶ Quantum many-body scars
- ▶ Many-body localization



To apply for participation in the Workshop, complete the online application form by **May 14, 2021**. This workshop will be organized by the virtual conference platforms.

For further information, see [pcs.ibs.re.kr](https://pcs.ibs.re.kr)

or contact the PCS Visitor Program at [pcs@ibs.re.kr](mailto:pcs@ibs.re.kr)

## Venue: virtual conference

- ▶ Institute for Basic Science (IBS) +82-42-878-8633  
Expo-ro 55, Yuseong-gu, Daejeon 34126, South Korea

## Invited Speakers

Sumilan Banerjee (India)  
Jens Bardarson (Sweden)  
Marcello Dalmonte (Italy)  
David Logan (UK)  
David J Luitz (Germany)  
Alexios Michailidis (Austria)  
Marcin Mierzejewski (Poland)  
Arijeet Pal (UK)  
Silvia Pappalardi (France)  
Frank Pollmann (Germany)  
Tomaž Prosen (Slovenia)  
Takahiro Sagawa (Japan)  
Naoto Shiraishi (Japan)  
Jakub Zakrzewski (Poland)

## Scientific Coordinators

Jae Dong Noh (Korea)  
Zlatko Papić (UK)  
Dario Rosa (Korea)  
Lev Vidmar (Slovenia)

## Organizers

Gileun Lee (Korea)  
Jaehee Kwon (Korea)