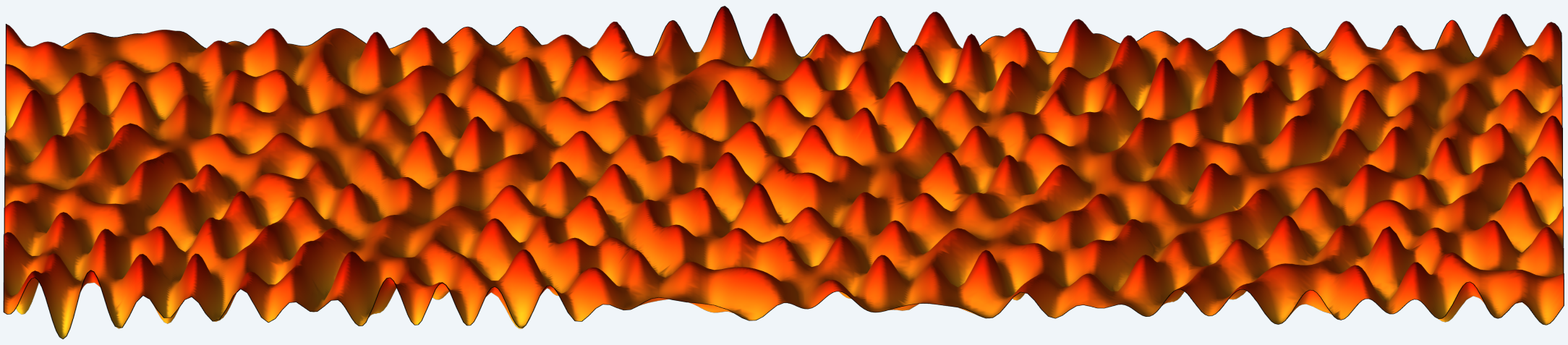
Institut de Physique Théorique

Theoretical physics courses



Quantum chaos and eigenstate thermalization

Mark Srednicki (UC Santa Barbara)

September 2022: Fri 16th 10:00–12:30, Mon 19th 15:00–17:30, Fri 23rd 10:00–12:30, Mon 26th 15:00–17:30, in person at IPhT and online.

Understanding the emergence of the rules of statistical mechanics for an isolated many-body system from an underlying quantum-mechanical microdynamics is a longstanding problem of fundamental physics.

Concepts from the theory of quantized classically chaotic systems can be used to resolve at least some of the key issues, and lead to the notion of eigenstate thermalization: individual energy eigenstates of the system as a whole appear to be states of thermal equilibrium when probed by local (few-body) observables.

These lectures will cover the basic ideas involved and how they extend to systems without classical limits, such as Ising and Heisenberg spin systems. Other topics, time permitting, will include the role of entropy in the dynamical description, the complications of additional symmetries, the nature of the classical limit, and the relation of these ideas to proposed alternatives such as canonical typicality.

To receive the latest news on this course, please subscribe to its newsletter at the website `courses.ipht.fr`.
Restricted, interactive video-conference: subscription to the course newsletter is compulsory to receive the links.
Open, non-interactive livestream at `youtube.com/ipht-tv`.

IPhT, CEA/Saclay
Orme des Merisiers bât. 774
F-91191 Gif-sur-Yvette

courses.ipht.fr