

## Q 1: Quantum Nano-Optics and Quantum Effects

Time: Monday 11:45–12:45

Location: H1

**Invited Talk**

Q 1.1 Mon 11:45 H1

**Towards phonon engineering at the nanoscale: material design and innovative experimental techniques** — ●ILARIA ZARDO — Department of Physics, University of Basel, CH-4056 Basel, Switzerland

The recently growing research field called “Nanophononics” deals with the investigation and control of vibrations in solids at the nanoscale. Phonon engineering leads to a controlled modification of phonon dispersion, phonon interactions, and transport. However, engineering and probing phonons and phonon transport at the nanoscale is a non-trivial problem.

In this talk, we discuss how phononic properties can be engineered in nanowires and the challenges and progresses in the measurement of phonons and of the thermal conductivity of nanostructures and low dimensional systems.

**Invited Talk**

Q 1.2 Mon 12:15 H1

**Hilbert space structure of eigenstates in many-body quantum systems** — ●ALBERTO RODRÍGUEZ — Departamento de Física Fundamental, Universidad de Salamanca, E-37008 Salamanca, Spain

In this talk, we will explore the characterization of the eigenstate structure in Hilbert space for systems of interacting particles borrowing the tools from multifractal analysis, which has a long history in the field of Anderson localization. We will discuss to which extent such formalism is able to unveil the complexity of many-body eigenstates and capture the existence of different ‘phases’ in the system [1-3], and how it is useful to characterize the emergence of chaos in systems of interacting bosons [4].

[1] J. Lindinger, A. Buchleitner, A. Rodríguez, PRL 122, 106603 (2019).

[2] D. J. Luitz, F. Alet, N. Laflorencie, PRL 112, 057203 (2014).

[3] N. Macé, F. Alet, N. Laflorencie, PRL 123, 180601 (2019).

[4] L. Pausch et al., PRL 126, 150601 (2021).