Quantum transport and thermodynamics in nanosystems

Our research interest is **charge** and **heat transport**, with or without Coulomb interactions, and non-equilibrium properties in **quantum nanosystems**.

Thesis are available within our current research lines:

- ☑ Hybrid superconducting systems, where superconductors coexist with normal materials such as metals, semiconductors, ferromagnets, or topological materials
- ☑ Topological matter:
  - i) Topological superconductors (Majorana bound states)
  - ii) Topological insulators
  - iii) Quantum Hall systems
- ☑ Single-electron systems, such as quantum dots and single-electron transistors
- ☑ Quantum wires with spin-orbit coupling
- ☑ Entanglement in solid state devices
- ☑ Graphene and other 2D materials
- ☑ Quantum thermodynamics:
  - i) coherent control of heat flows in hybrid junctions
  - ii) energy exchange in open quantum systems
  - iii) energy storage in many-body quantum systems

We collaborate, at NEST, with various experimental groups.

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Our publications can be found following the link on the arXiv.

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