Quantum Optics with Superconducting Circuits

JUAN JOSE GARCiA RIPOLL

February 18, 2020
10:15 to 11:15
Seminar Room

Lectures, February 18, 2020, 10:15. ICFO's Seminar Room

JUAN JOSE GARCiA RIPOLL
Quantum Information and Foundations Group
Institute of Fundamental Physics IFF-CSIC, Madrid

Superconducting quantum circuits is the field that studies electrical circuits built from superconducting materials, and operating at such low temperatures that excitations become quantized. These circuits include linear resonators and waveguides, which store and transport microwave photons, and nonlinear circuits, such as transmons or flux qubits, which behave like artificial atoms. I will introduce the theory behind these models, how put together they can simulate canonical models from Quantum Optics and Condensed Matter Physics (Rabi model, spin-boson model), explore new regimes of light-matter interaction (Ultrastrong and deep-ultrastrong coupling), and act as building blocks of the largest quantum computers and quantum annealers.

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Hosted by: Antonio Acin