# Quantum Optics with Superconducting Circuits

JUAN JOSE GARCiA RIPOLL

February 20, 2020
10:15 to 11:15
ICFO's Blue Lecture Room

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.

**Lectures, February 20, 2020, 10:15. ICFO's Blue Lecture Room**
**Hosted by:** Antonio Acin