Contribution ID : **3** Type : **Oral**

Atom-photon bound states in an array of high-impedance superconducting resonators

giovedì 14 ottobre 2021 14:10 (25)

Engineering the electromagnetic environment of a quantum emitter gives rise to a plethora of exotic light-matter interactions. In particular, photonic lattices can seed long-lived atom-photon bound states inside photonic band gaps. We report on the implementation of a novel microwave architecture consisting of an array of high-impedance superconducting resonators forming a 1 GHz-wide pass band, in which we have embedded two frequency-tuneable artificial atoms. We study the atom-field interaction and access previously unexplored coupling regimes, in both the single- and double-excitation subspace. In addition, we demonstrate coherent interactions between two atom-photon bound states, in both resonant and dispersive regimes. The presented architecture holds promise for quantum simulation with tuneable-range interactions and experiments in non-linear photon transport. Reference: arXiv:2107.06852

Primary author(s) : GASPARINETTI, Simone (Chalmers University of Technology)

Presenter(s) : GASPARINETTI, Simone (Chalmers University of Technology)

Session Classification : Session 9