Physical Sciences Seminar

Quasiparticle dynamics in Andreev quantum dots

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Host: Georgios Katsaros

An Andreev quantum dot (AQD) is a phase-biased superconducting weak link in which discrete quasiparticle states, called Andreev states, develop within the superconducting gap. In particular, a single-channel AQD accommodates one Andreev state that can be occupied by either zero, one or two quasiparticles. In a recent experiment we demonstrated the coherent manipulation of the two-level system formed by the even states [1]. Moreover, as a common feature to other superconducting devices, the single-occupied state of the AQD was also observed. In this talk, I will present experiments on Andreev quantum dots obtained from one-atom contacts between aluminum electrodes, in which we probe quasiparticle dynamics using circuit-Quantum Electro-Dynamics like techniques [1]. I will focus in particular on the role of the odd state in the relaxation of the AQD and on the effect of the cavity on the dynamics.*In collaboration with: L. Tosi, H. Pothier and C. UrbinaReferences[1] C. Janvier et al., Science 349, 1199 (2015)

Tuesday, February 6, 2018 11:00am - 12:30pm
Big Seminar room Ground floor / Office Bldg West (I21.EG.101)

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