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Proximity Effects in Superconductor–Graphene Junctions[1]
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Superconducting proximity effects are of particular interest in graphene: because of its band structure, an unconventional (specular) Andreev reflection is expected [1]. In this context, high-Tc superconductor-graphene junctions are especially attractive. In these, the size of the superconducting energy-gap may exceed the graphene doping inhomogeneities around the Dirac point, which should favor the observation of the specular Andreev reflection. Yet, the fabrication of high-Tc superconductor-graphene junctions is challenging: the usual growth and lithography processes in both materials are incompatible. We report here on a fabrication method that allow us to fabricate planar cuprate superconductor-graphene junctions, which we characterize via conductance spectroscopy. We analyze the features in the conductance spectra as a function of graphene doping, and discuss them in the framework of the Andreev reflection. [1] C. W. J. Beenakker. Phys. Rev. Lett. 97, 067007 (2006)

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