

Effect of dilute impurities on short graphene Josephson junctions

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Within the Dirac-Bogoliubov-de Gennes approach [1], we study the effect of a dilute homogeneous spatial distribution of nonmagnetic impurities on the equilibrium supercurrent sustained by a ballistic graphene Josephson junction, in the short junction limit [2,3]. We find a modification of the current-phase relation with a reduction of the skewness induced by the disorder, and a nonmonotonic temperature dependence of the critical current. Moreover, we investigate the power spectrum of the supercurrent, used as a tool for spectroscopic analysis of the disordered impurities.

References

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