

Abstract Submitted
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Transport through Andreev Bound States in a Graphene-base Quantum Dot¹ YANJING LI, NADYA MASON, University of Illinois at Urbana-Champaign — We perform tunneling spectroscopy on a graphene-quantum dot (QD)-superconductor junction, a system in which sharp, gate-tunable Andreev bound states (ABS) in the spectra have been observed [1]. Here we extend previous results, particularly regarding the origins of the QD. In particular, we discuss how a discontinuous layer of AlO_x between the superconductor and the graphene plays a role in the formation of the QD. We also discuss additional spectroscopic features that may be due to multiple QDs and energy levels. Finally, we show that a robust superconducting tunneling junction can be created in a lead-graphene structure, without the explicit deposition of a tunneling barrier.

[1] Dirks, T., Nature Physics 7, 386–390 (2011)

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