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Oscillation of the Critical Temperature in Proximity Systems Involving Graphite[1] JULIUS C. DE ROJAS, ANDREAS BILL, California State University, Long Beach, California, VLADIMIR Z. KRESIN, Lawrence Berkeley National Laboratory, Berkeley, California — We study properties of superconducting-graphite proximity systems as a function of graphite thickness. Size quantization effects become prominent for semi-metallic thin films and lead to oscillations of normal and superconducting properties. In particular, we discuss the oscillation of the density of states and of T_c and compare to existing experimental data.[2] We also discuss the increase of the critical temperature in graphite/Nb thin films with respect to the observed value in a single Nb thin film. The result is analyzed in terms of additional pairing contributions and possible intrinsic superconductivity in graphite. We also address the situation when graphite is replaced by a graphene multilayer.

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[2]T. Kubo *et al.* Physica C **420**, 78 (2005), *ibid.* **460-462**, 1013 (2007)

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