## Abstract Submitted for the MAR05 Meeting of The American Physical Society

effect Superconducting proximity in superconductor / semiconducting-carbon-nanotube / superconductor junctions. PAOLA BARBARA, KYLE HATTON, ALEXANDER TSELEV, JIAN ZHANG, Department of Physics, Georgetown University, Washington, DC 20057, USA. — We measure the proximity effect in devices made of two superconducting electrodes bridged by a 3-micrometer long semiconducting carbon nanotube. The electrodes are made of a Pd/Nb bilayer and the junctions are fabricated by using standard photolithography [1]. The superconducting proximity effect manifests itself with a peak in the low-bias differential conductance due to Andreev reflection at the superconductor/carbon nanotube interfaces. Application of a gate voltage allows the transparency of the junction to be tuned from high (Andreev reflection) to low (tunneling) [2]. We have studied the temperature dependence of the features in each regime. This work is supported by the NSF (DMR-0239721) and by the Research Corporation. [1] A. Tselev, K. Hatton, M. S. Fuhrer, M. Paranjape and P. Barbara, Nanotechnology 15, 1475 (2004). [2] A. F. Morpurgo, J. Kong, C. M. Marcus, and H. Dai, Science 286, 263 (1999).

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