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Zero-bias anomaly and possible superconductivity in single-walled carbon nanotubes JIAN ZHANG, ALEXANDER TSELEV, YANFEI YANG, KYLE HATTON, PAOLA BARBARA, Department of Physics, Georgetown University, Washington, DC 20057, SERHII SHAFRANIUK, Physics and Astronomy Department, Northwestern University, Evanston IL 60208 — We report measurements of field-effect transistors made of isolated single-walled carbon nanotubes contacted by superconducting electrodes. For large negative gate voltage, we find a dip in the low-bias differential resistance. Surprisingly, this dip persists well above the superconducting transition temperature of the electrodes, indicating that it is not caused by superconducting proximity effect from the electrodes. This conclusion is supported by measurements on carbon nanotubes contacted by normal electrodes showing similar features. One possible explanation is superconductivity in the nanotubes.

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