Abstract Submitted
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Anomalous Long-Range Proximity Effect Observed in Single-Crystal Superconducting Nanowires[1] HAIDONG LIU, Texas A&M University, ZUXIN YE, HONG ZHANG, ZHIPING LUO, K.D.D RATHNAYAKA, WENHAO WU, Department of Physics and MIC, Texas A&M University — An anomalous proximity effect has been observed in single-crystal Pb, Sn, and Zn nanowires, each in contact with a pair of macroscopic electrodes. With electrodes having a higher critical temperature Tc, superconductivity is induced at the Tc of the electrodes in Sn and Zn nanowires as long as 60 μm, which is more than 10 times the expected length defined by current theories. This effect is further confirmed by the field dependence of the resistive transitions and I-V characteristics. It is found to depend sensitively on the residual-resistance-ratio of the nanowires.

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