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Observation of giant supercurrent states in a superconductor-InAs/GaSb-superconductor junction XIAOYAN SHI, Sandia National Laboratories, WENLONG YU, ZHIGANG JIANG, Georgia Institute of Technology, B. ANDREI BERNEVIG, Princeton University, W. PAN, S.D. HAWKINS, J.F. KLEM, Sandia National Laboratories — We report observations of the proximity effect induced giant supercurrent states in an InAs/GaSb bilayer system that is sandwiched between two superconducting tantalum electrodes to form a superconductor-InAs/GaSb-superconductor junction. Electron transport results show that the supercurrent states can be preserved in a surprisingly large temperature-magnetic field (T-H) parameter space. In addition, the evolution of differential resistance in T and H reveals an interesting superconducting gap structure. Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

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