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Super-Hard induced gap in InSb nanowires JUN CHEN, PENG YU, Univ of Pittsburgh, MORA HOCEVAR, CEA, Grenoble, France, SBASTIEN PLISSARD, DIANA CAR, ERIK BAKKERS, Eindhoven University of Technology, the Netherlands, SERGEY FROLOV, Univ of Pittsburgh — In recent years, Majorana bound states were observed experimentally in InSb nanowire-superconductor hybrid devices, which manifested themselves as a zero-bias conductance peak (ZBP). However, there was still significant conductance inside the superconducting gap, which would smear sub-gap features. Moreover, fermionic states inside the gap would also break topological protection. Therefore, a hard gap is required in search of more deterministic signatures of Majorana bound states, and building up Majorana qubits. We report the observation of a hard induced gap in an InSb Josephson junction with an optimized superconducting contact recipe. The gap is resolved in magnetic field up to 2 Tesla, and demonstrates a peculiar kinked field dependence. In addition, we observed rich sub-gap features: Andreev levels appeared close to pinch off regime, while multiple Andreev reflection appeared in open regime.

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