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Crossed Andreev reflection in InSb nanowire multi-terminal devices. DEGUI QIAN, Institute of Physics Chinese Academy of Sciences — Crossed Andreev reflection (CAR), as known as a non-local Andreev reflection, is a process where the quasiparticles that form a Cooper pair, are spatially separated but still entangled. The process is of interest in the formation of solid-state quantum entanglement, via the formation of a spatially separated entangled electron-hole (Andreev) pair, with applications in spintronics and quantum computing. Additionally, coupling two one-dimensional (1D) structures via CAR is interesting for engineering a topological state of matter hosting parafermion or Majorana. Thus, searching for systems with a large probability and convenient manipulation of CAR is desirable. InSb is known for its large g-factor and strong spin-orbit interaction, which is a good candidate for this purpose. Here, we designed InSb nanowire multi-terminal devices with superconducting electrode (Al) and observed a strong CAR, which is gate-tunable. In general, the InSb nanowire provide a promising platform to use CAR for creating topological zero modes or for applications in Cooper pair splitting.

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