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Andreev Transport in InSb Nanowire Quantum Point Contacts STEPHEN GILL, MALCOLM DURKIN, JOHN JEFFREY DAMASCO, University of Illinois at Urbana-Champaign, SASA GAZIBEGOVIC, ERIK BAKKERS, Eindhoven University of Technology, NADYA MASON, University of Illinois at Urbana-Champaign — Controlling mesoscopic and topological superconductivity in nanowires requires a nearly pristine superconductor-nanowire interface. We report on progress in controlling the proximity effect in InSb nanowires directly contacted with high quality Al. We discuss ballistic 1D transport in hybrid InSb nanowire-superconductor based quantum point contacts, which indicate a transparent Al-nanowire interface. We further discuss the how the conductance quantization in the normal state of InSb nanowires correlates to Andreev transport in the superconducting state. We find that Andreev conductance enhancements up to the theoretical limit of 2 can be observed. In addition, we explore the magnetic field and temperature dependence of the proximity superconductivity in ballistic InSb nanowire devices.

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