

Abstract Submitted  
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**Superconducting contacts to Ge/Si core/shell nanowires** ZHAOEN SU, AZARIN ZARASSI, DHARAMRAJ PATIL, SERGEY FROLOV, University of Pittsburgh, MOIRA HOCEVAR, Institute Neel CNRS, MINH NGUYEN, JINKYOUNG YOO, Los Alamos National Laboratory, SHADI DAYEH, University of California San Diego — Ge/Si core/shell nanowires are hosts to one dimensional hole gas. The spin-orbit interaction is expected to be much larger than that in electron systems such as InSb and InAs. Therefore, Ge/Si nanowires have great potential to demonstrate helical liquid. When strong superconductivity is induced in the nanowire, robust topological superconductivity may form in the system. We will show how to achieve semiconductor-superconductor contacts to the nanowire. The effects of a few surface cleaning methods and annealing process on the contact resistance will be shown. Superconducting contacts of NbTiN, Al, Ti and their combinations are studied. NbTiN may be suitable for hybrid device carrying Majorana fermions for its high critical temperature and magnetic field. Supercurrent through Josephson junctions with these contacts is measured.

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