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Conductance through a proximitized nanowire in the Coulomb blockade regime BERNARD VAN HECK, Yale University, ROMAN LUTCHYN, Microsoft Station Q, LEONID GLAZMAN, Yale University — Motivated by recent experiments of the Copenhagen group on InAs nanowires with epitaxial Al [1], we investigate the two-terminal conductance of a strongly proximitized nanowire in the Coulomb blockade regime. We identify the leading electron transport processes at zero applied magnetic field B as well as at finite fields, suppressing the induced gap $\Delta_{\text{ind}}(B)$. In the conventional superconducting phase, the conductance is controlled by the sequential Cooper pair tunneling if $\Delta_{\text{ind}}(B)$ exceeds the charging energy E_c, and by the elastic single-electron processes if $\Delta_{\text{ind}}(B) < E_c$. The latter mechanism yields smaller values of the linear conductance, and strongly asymmetric Coulomb blockade peaks, which explains the experimental finding in Ref. [1]. We also develop a quantitative theory for the differential conductance and examine its evolution across the topological transition point. [1] A. Higginbotham et al., Nature Physics (2015) doi:10.1038/nphys3461

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