

Abstract Submitted
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Andreev reflection in edge states of time reversal invariant Landau levels K. G. S. H. GUNAWARDANA, Ames Laboratory, Iowa State University, BRUNO UCHOA, University of Oklahoma — We describe the conductance of a normal-superconducting junction in systems with Landau levels that preserve time-reversal symmetry. Those Landau levels have been observed in strained honeycomb lattices. The current is carried along the edges in both the normal and superconducting regions. When the Landau levels in the normal region are half filled, the Andreev reflection is maximal and the conductance plateaus have a peak as a function of the filling factor. The height of those peaks is quantized at $4e^2/h$. The interface of the junction has Andreev edge states, which form a coherent superposition of electrons and holes that can carry a net valley current. We identify unique experimental signatures for superconductivity in time-reversal-invariant Landau levels.

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