

Abstract Submitted
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Zero energy modes in heterostructures TUDOR PETRESCU, STEPHAN RACHEL, KARYN LE HUR, Physics Department, Yale University — Zero energy gapless modes have been realized in 1-dimensional domain walls of 2-dimensional systems. In the case of single- or bi-layer graphene, such a quantum wire can be realized by inverting the sign of the gap across a one dimensional interface, without time-reversal symmetry breaking. With the experimental realization of artificial graphene, previously unrealistic additional terms in the Hamiltonian such as staggered potential or artificial gauge fields can be exploited towards the same goal. We classify these terms and study the interplay of disorder effects and boundary conditions.

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