Abstract Submitted
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Zero Landau level in folded graphene nanoribbons[1] ELSA PRADA, Instituto de Ciencia de Materiales de Madrid-CSIC, PABLO SAN-JOSE, Instituto de Estructura de la Materia-CSIC, LUIS BREY, Instituto de Ciencia de Materiales de Madrid-CSIC — Graphene nanoribbons can be folded into a double layer system keeping the two layers decoupled. In the Quantum Hall regime folds behave as a new type of Hall bar edge. We show that the symmetry properties of the zero Landau level in metallic nanoribbons dictate that the zero energy edge states traversing a fold are perfectly transmitted onto the opposite layer. This result is valid irrespective of fold geometry, magnetic field strength and crystallographic orientation of the nanoribbon. Backscattering suppression on the N=0 Hall plateau is ultimately due to the orthogonality of forward and backward channels, much like in the Klein paradox.

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