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Spin and valley polarized quantum Hall edge states in monolayer graphene DI WEI, School of Engineering and Applied Sciences, Harvard University, JAVIER SANCHEZ-YAMAGISHI, Physics Department, Massachusetts Institute of Technology, TOENO VAN DER SAR, Physics Department, Harvard University, PABLO JARILLO-HERRERO, Physics Department, Massachusetts Institute of Technology, AMIR YACOBY, Physics Department, Harvard University — Studying edge transport in the quantum Hall regime provides insight into the nature of partially filled Landau levels. Previous reports on graphene have shown that when the four-fold degeneracy of each Landau level is lifted, spin and valley polarizations influence scattering between edges. We report progress on the fabrication of monolayer graphene devices encapsulated in hexagonal boron nitride (hBN), a technique which allows us to produce pristine graphene samples showing robust broken symmetry quantum Hall states. Additionally, graphene encapsulation allows us to create both globally and locally gated regions with sharp carrier density boundaries due to our thin hBN gate dielectrics. Here we study the transport of spin and valley polarized edge currents at these junctions.

Di Wei
Harvard University

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