Abstract Submitted
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Measurements of the effect of a random vector potential in graphene[1] MARK LUNDEBERG, JOSHUA FOLK, University of British Columbia
— High-resolution images have consistently demonstrated the presence of ripples in graphene flakes. Strain associated with the ripples can, in principle, affect the electronic properties by inducing a random gauge field. We report measurements of the analogous effects of a random vector potential generated by applying an in-plane magnetic field to a graphene flake. Phase-coherent weak localization is suppressed, while quasi-random Lorentz forces lead to anisotropic magnetoresistance. Distinct signatures of these two effects enable an independent estimation of the ripple amplitude and correlation length. By comparing to the dephasing effects of the random vector potential, the intra-valley scattering rate associated with graphene's ripples can be calculated.

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