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Toward disorder-free graphene JESSE BALGLEY, Department of Physics, The City College of New York, LEI WANG, Electrical Engineering and Mechanical Engineering, Columbia University, YUANDA GAO, Mechanical Engineering, Columbia University, BO WEN, Department of Physics, The City College of New York, JIM HONE, Mechanical Engineering, Columbia University, CORY DEAN, Department of Physics, The City College of New York — Integration of monolayer graphene with BN dielectrics has enabled substantial reduction in disorder with recent graphene devices exhibiting ballistic transport over tens of microns. However, low density response and magneto transport in the quantum Hall effect regime indicate a remnant disorder temperature above a few Kelvin. In my talk I will show how low field Shubnikov-de Haas oscillations measured from encapsulated BN/G/BN devices are consistent with a remote-impurity scattering model, suggesting that the residual source of disorder may lie outside the heterostack. Using our recently developed fabrication techniques together with the edge contact geometry, we will present new strategies to eliminate this residual scattering.

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