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Carbon nanotube as a local drag sensor AUSTIN CHENG, Harvard University, JEAN-DAMIEN PILLET, Columbia University, PHILIP KIM, Harvard University — We report a Columb drag measurement in a carbon nanotube (CNT) and graphene hybrid device. In this device, the CNT and graphene serve as a 1D and 2D electronic system respectively and are separated by a thin hexagonal boron nitride (h-BN). By flowing a drive current in one conductor, due to electron-electron interactions, a drag voltage is developed in the other conductor. In the case where a current is applied to graphene, the CNT can act as a local drag sensor that probes the microscopic effects of electronic interactions hidden in graphene. We demonstrate this drag sensor capability by applying a magnetic field in graphene and show the transition from compressible states to incompressible states.

Austin Cheng
Harvard Univ

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