Magneto-transport Properties in Suspended Graphene Devices

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— High carrier mobility and long coherence lengths are the main attributes which have attracted so much attention to graphene as a new electronic material. Recent studies have shown that electronic properties of graphene are extremely sensitive to disorder, particularly those induced by substrate interactions. By simply isolating graphene devices from the substrate by suspending them, however, they have shown interesting charge transport behaviors such as ballistic transport [1] and the fractional quantum Hall effects[2,3], which can be attributed to the intrinsic electronic properties of graphene. In this talk, we present results on magneto-transport measurements of suspended graphene devices with different geometries and degrees of disorder as a function of temperature. Two- and four-probe measurements of devices with different aspect ratios are compared and discussed. [1] X. Du et al., Nature Nanotechnology 3, 491 (2008). [2] X. Du et al., Nature 462, 192 (2009). [3] K. Bolotin et al., Nature 462, 196 (2009).