Abstract Submitted
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Immense Weak Localization Effect in CVD Graphene[1] OLESYA SARAJLIC, RAMESH MANI, Georgia State University — In this study, we report magnetoresistance (MR) measurements on graphene grown by chemical vapor deposition (CVD) on copper. CVD graphene is transferred onto SiO_2/Si substrate and Hall bar devices with Au/Ti contacts are fabricated by photo-lithography. Measurements show that the diagonal resistance R_{xx} varies logarithmically vs. temperature and magnetic field, as expected for weak localization. The interesting aspect here in CVD graphene is that weak localization effect is immense compared to the typical observation in dirty metals. At zero magnetic field, R_{xx} increased by about 7% with decreasing temperature from 110 K to 1.5 K. From the observed weak localization, we extract characteristics lifetimes and length scales, and compare the results with theoretical expections [1], and other weak localization work on CVD graphene [2,3].

[1] McCann, E. et al. Phys. Rev. Lett. 97, 2006, 146805.
[2] Miao, Z. et al. J. Phys.: Condens. Matter 24, 2012, 475304.
[3] Wang, W. et al. Carbon, 2012.

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