

Abstract Submitted
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Fractional Quantum Hall Effect in Suspended Graphene: Transport Coefficients and Electron Interaction Strength D.A. ABANIN, Princeton University, I. SKACHKO, Rutgers University, X. DU, SUNY, E.Y. ANDREI, Rutgers, L.S. LEVITOV, MIT — Fractional quantum Hall effect (FQHE), observed recently in suspended graphene (SG) [1], was found to persist up to temperatures much higher than in previously studied systems, such as GaAs. This suggests strong electron interactions in SG. Can the interaction strength be inferred from the measurements? The best results on FQHE were obtained on micron-size SG flakes, where only two-terminal measurements could be performed. This talk will address the problem of determining transport coefficients from the two-terminal conductance in the FQHE regime. A general approach, which relies on the conformal invariance of two-dimensional magnetotransport, is used to extract σ_{xx} and σ_{xy} . From the temperature dependence of σ_{xx} we estimate the energy gap of quasiparticle excitations in the $\nu = 1/3$ state. The gap value, which is found to be well above that measured in GaAs systems [2], is compared to theoretical predictions. Our approach provides a new tool for the studies of quantum transport in suspended graphene and other nanoscale systems. [1] X. Du et al, Nature 462, 192 (2009); K. Bolotin et al, *ibid.*, 196 (2009). [2] G. S. Boebinger et al, Phys. Rev. Lett. 55, 1606 (1985).

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