

Abstract Submitted
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Observation of insulating behavior and strong localization in suspended monolayer graphene¹ CENK YANIK, YASER VAHEB, ABDULKADIR CANATAR, VAHID SAZGARI, ISMET I. KAYA, Sabanci University, QUANTUM TRANSPORT AND NANOELECTRONICS LABORATORY TEAM — Dirac point of graphene is known to be inaccessible due to the electron hole puddles which screen the neutrality point and makes the minimum conductance limited to the order of e^2/h . However, in extremely clean suspended graphene samples, there is a possibility to observe a diverging resistance approaching the charge neutrality point via yet to be understood localization or Boltzmann transport mechanism. We observe a resistance in excess of 10^6Ohm near the charge neutrality point in a very high quality suspended monolayer graphene in the absence of magnetic field. The sample exhibits negative magnetoresistance indicating a strong localization effect at low charge carrier densities. The possible origins of these observations will be discussed in the context of the transport mechanisms mentioned above.

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