Abstract Submitted
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Direct Measurement of the Fermi Energy in Graphene Using a Double Layer Structure[1] SEYOUNG KIM, INSUN JO, DAVID DILLEN, DOMINGO FERRER, BABAK FALLAHAZAD, ZHEN YAO, SANJAY BANERJEE, EMANUEL TUTUC, The University of Texas at Austin — The Fermi energy is a fundamental property of an electron system. Here we introduce a direct measurement technique of the relative Fermi energy as a function of carrier density, using transport measurement in a double layer structure where one of the layers is graphene. The principle of this method is that the Fermi energy in the target material is equal to the applied inter-layer bias required to bring the graphene layer to charge neutrality point. Using a double layer graphene structure, we illustrate the technique by measuring the Fermi energy in one of the graphene layers. By mapping the top graphene layer zero density line as a function of bottom and inter-layer bias, we measure the Fermi energy as a function of carrier density at zero and in high magnetic fields. We extract the Fermi velocity, Landau level spacing and Landau level broadening.

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