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Magnetic Quantization of Exfoliated Graphene Probed with Scanning Tunneling Spectroscopy GREGORY M. RUTTER, CNST, NIST, SUYONG JUNG, NanoCenter, UMD/CNST, NIST, NIKOLAI N. KLIMOV, NanoCenter, UMD/CNST and EEEL, NIST, DAVID B. NEWELL, EEEL, NIST, NIKOLAI B. ZHITENEV, JOSEPH A. STROSCIO, CNST, NIST — Recent scanning tunneling spectroscopy studies have shown the excellent magnetic quantization of Dirac fermions in epitaxial graphene on SiC [1]. Landau level lifetimes of ≈ 0.4 ps were observed, indicating the high mobility of these graphene samples. In this talk, we compare the magnetic quantization properties of exfoliated graphene to what was previously measured for epitaxial graphene [1]. The exfoliated graphene sample was made by removing graphene layers from natural graphite, then placing them onto a SiO_2/Si substrate. A gold electrode, used for the tunneling bias, was deposited using a shadow mask technique. Magnetic quantization of the graphene is then probed with both the application of an external magnetic field and with an external gate voltage applied to the Si substrate below the graphene. Through the electric field effect, the external gate voltage will change the carrier density in the graphene, giving us new information about the screening and carrier dependence of the Landau level lifetimes.

[1] D. L. Miller et al., *Science* **324**, 924 (2009).

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