Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Fermi velocity renormalization in twisted graphene layers[1] A. LUICAN, G. LI, E.Y. ANDREI, Rutgers U., J.M.B. LOPES DOS SANTOS, U. Porto, A.H. CASTRO NETO, U. Boston, A. REINA, J. KONG, MIT, R.R. NAIR, K.S. NOVOSELOV, A.K. GEIM, U. Manchester — A twist between stacked graphene layers produces a super-lattice which for certain rotation angles gives rise to Moiré patterns. These patterns are often seen in STM images, but their effect on the electronic properties is not fully understood. Using scanning tunneling microscopy and spectroscopy, we obtain direct evidence for the electronic structure of twisted graphene layers. The samples were suspended membranes of CVD grown graphene which contain areas with various rotation angles. We find that the density of states on twisted layers develops two Van Hove singularities that flank the Dirac point [1] at an energy that is proportional to the twist angle. In the presence of a magnetic field the density of states develops quantized Landau levels (LL) characteristic of massless Dirac fermions. From the energy and field dependence of the LL sequence we obtain the Fermi velocity and find that it is renormalized by an amount that depends on the angle of rotation. These results are compared with theoretical predictions. [1] G. Li et al, Nature Physics (2009) doi:10.101038/NPHYS1463

[1]Funding: DOE DE-FG02-99ER45742, Lucent-Alcatel, NSF-DMR-0906711.

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Date submitted: 27 Nov 2009 Electronic form version 1.4