Graphene on a graphite surface: effect of interlayer coupling.\textsuperscript{1} ADINA LUICAN, GUOHONG LI, EVA Y. ANDREI, Department of Physics and Astronomy, Rutgers University, Piscataway, New Jersey 08854, USA — We present low temperature high magnetic field scanning tunneling microscopy and spectroscopy on a sheet of graphene suspended above a graphite substrate. The sheet consists of two regions that couple to the substrate with different strengths resulting in two distinct sequences of Landau Levels (LL). One region exhibits a sequence that is typical of single layer graphene (square root dependence on field and level index) with a reduced Fermi velocity that is renormalized by electron-phonon interactions. The sequence in the other region is anomalous and, according to recent theoretical work \cite{1}, it can be attributed to a bilayer with interlayer coupling that is \(10\) times weaker than that of normal bilayers. We find that the difference between the two regions is also reflected in the values of the Fermi velocity, suggesting that electron-phonon renormalization is suppressed by interlayer coupling.

\textsuperscript{1}M. Pereira, F.M. Peeters and P. Vasilopoulos, Phys. Rev. B 76, 115419 (2007)

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