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Infrared absorption in graphene ERIK HENRIKSEN, ZHIGANG JIANG, Columbia University, RICHARD TUNG, YONG-JIE WANG, NHMFL, MOLLIE SCHWARTZ, MELINDA HAN, PHILIP KIM, HORST STORMER, Columbia University — We present evidence for the cyclotron resonance transition between the lowest lying Landau levels near the Dirac point in a single layer of graphene, in magnetic fields up to 18T. At constant field, we modulated the back gate voltage on large area graphene samples to determine the infrared absorption from 400 to 3000 cm^{-1} using a FTIR spectrometer. All data were taken at 4.2K with simultaneous measurement of the graphene carrier densities and mobilities. We find transmission minima having widths of $\approx$500 cm^{-1}, whose shift in energy is consistent with a square root dependence on the magnetic field as expected for two dimensional Dirac fermions. From this field dependence, the Fermi velocity is estimated at 1.1×10^6m/s, in good agreement with literature values.

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