Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Magneto-phonon resonances in exfoliated graphene on hexagonal boron nitride[1] CHRISTOPH NEUMANN, SVEN REICHARDT, MARC DROEGELER, JARA-FIT and II. Institute of Physics A, RWTH Aachen; PGI-8/9, Forschungszentrum Juelich, Germany, KENJI WATANABE, TAKASHI TANIGUCHI, National Institute for Materials Science, 1-1 Namiki, Tsukuba, 305-0044, Japan, SLAVA V. ROTKIN, Lehigh University, Bethlehem, Pennsylvania 18015, USA; JARA-FIT and II. Institute of Physics A, RWTH Aachen, BERND BESCHOTEN, CHRISTOPH STAMPFER, JARA-FIT and II. Institute of Physics A, RWTH Aachen; PGI-8/9, Forschungszentrum Juelich, Germany — Raman microscopy has become a powerful and widespread tool in graphene research. An interesting scenario emerges when Raman microscopy is combined with magnetic fields, as transitions between distinct Landau levels can couple to the optical phonon modes responsible for the graphene G-Line, forming magneto-phonon resonances (MPRs). Here, we investigate exfoliated graphene flakes partly deposited on SiO_2 and partly on hexagonal boron nitride (hBN). Employing a confocal Raman setup with 500 nm spot size and variable magnetic field of up to 9 T, we compare the regions with different substrates. Distinct MPRs occur only in the graphene on hBN area. From the dominant MPR at around 3.7 T we extract an increased Fermi velocity of above 1.15 x 10^6 m/s, owing to very low doping in our samples.

[1]Support by the ERC and DFG is gratefully acknowledged.

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Date submitted: 15 Nov 2013 Electronic form version 1.4