

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Quantum Hall effect in graphene: the role of the contacts and the device geometry¹ TOBIAS KRAMER, CHRISTOPH KREISBECK, VIKTOR KRUECKL, University of Regensburg, ERIC J. HELLER, ROBERT E. PARROTT, Harvard University — We investigate the motion of electronic wave-packets in the mean-field potential of a graphene Hall bar. The presence of Ohmic contacts enforces metallic boundary conditions along the source and drain contacts and affects the global form of the Hall potential in small devices, offering a possible explanation for the difficulty to detect the QHE in graphene in a four-terminal setup. Our injection-model of the QHE takes into account the existence of hot-spots in the device, which break any translational invariance. References: <http://www.quantumdynamics.de/publications.html>

¹Supported by the Emmy-Noether Program of the DFG.

Tobias Kramer
Institute for Theoretical Physics, University of Regensburg

Date submitted: 20 Nov 2009

Electronic form version 1.4