Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Pseudo Magnetic Faraday and Quantum Hall Effect In Oscillating Graphene[1] ANITA BHAGAT, KIERAN MULLEN, Homer L. Dodge Department of Physics and Astronomy, Univ. of Oklahoma — When a graphene layer is stressed, the strain changes the phase between sites in a tight binding model of the system. This phase can be viewed as a pseudo-magnetic vector potential. The corresponding pseudo-magnetic field has been experimentally verified in static cases.[2] We examine the case of oscillating graphene ribbons and explore two new effects. The first is to investigate an oscillating pseudo-magnetic field that produces a quantum Hall effect: we calculate the I-V characteristic of an oscillating graphene nanoribbon as a function of frequency, and amplitude in both the oscillations and the applied driving voltage. Second, the time dependent pseudo-magnetic field should produce a pseudo-Faraday effect driving electrons in different valleys in opposite directions. In both cases, we make explicit calculations for experiment.

[1]This project was supported in part by the US National Science Foundation under Grant DMR-1310407.
[2]N. Levy et al. *Science* **329**, 544 (2010)

Kieran Mullen
Homer L. Dodge Department of Physics and Astronomy, Univ. of Oklahoma

Date submitted: 05 Nov 2015 Electronic form version 1.4