Abstract Submitted
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Scanning photocurrent microscopy in Graphene mediated by photo-Nernst effect[1] ZAIYAO FEI, HELIN CAO, GRANT AIVAZIAN, Department of Physics, University of Washington, JASON ROSS, Department of Materials Science and Engineering, University of Washington, DAVID COBDEN, Department of Physics, University of Washington, XIAODONG XU, Department of Physics, Department of Material Science and Engineering, University of Washington — We have performed scanning photocurrent microscopy on monolayer graphene devices in a perpendicular magnetic field of up to 7 T. At zero field we observe photocurrent generated only near the contacts, but for a finite magnetic field an additional edge magneto-photocurrent contribution appears far from the contacts which is odd in magnetic field. The edge photocurrent also has opposite polarities for opposite edges. At low field this contribution can be well explained by the photo-Nernst effect combined with the nonlocal current generation mechanism described by Son and Levitov (ref. Phys. Rev. B 90, 075415, 2014). The effect persists to room temperature. At higher fields Landau quantization effects are seen along with oscillations of the magneto-photocurrent. The theory remains inadequate to explain all the features in this regime.

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