

Abstract Submitted
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Photocurrent Generation in the Fractional Quantum Hall Regime of Graphene SANFENG WU, Department of Physics, University of Washington, LEI WANG, Department of Electrical Engineering, Columbia University, YOU LAI, National High Magnetic Field Laboratory, GRANT AIVAZIAN, HELIN CAO, Department of Physics, University of Washington, CORY DEAN, Department of Physics, Columbia University, JAMES HONE, Department of Mechanical Engineering, Columbia University, ZHIQIANG LI, National High Magnetic Field Laboratory, XIAODONG XU, Department of Physics, University of Washington — Significant understanding toward fractional quantum Hall effects has been made through probing the quantum transport of carriers at the Fermi surface. However, little is known about the non-equilibrium behavior of the carriers that are excited above the Fermi Sea. In this talk, we will discuss the transport phenomena of photo-excited carriers in the quantum Hall regime of graphene. By probing the photocurrent generation through the edge channels of a graphene field effect transistor under high magnetic field and low temperature, we observe chiral edge transport of photo-excited carriers. The observed photocurrent can directly resolve both integer and fractional quantum Hall states. Our measurements may provide a new experimental approach to uncover the rich and exotic physics related to fractional quantum Hall effects.

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