Abstract Submitted
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Low Temperature Photocurrent Measurements in Graphene Devices[1] GEORGE NAZIN, Center for Functional Nanomaterials, Brookhaven National Lab, YAN ZHANG, Department of Physics & Astronomy, Stony Brook University, LIYUAN ZHANG, PETER SUTTER, Brookhaven National Lab — The Dirac-like chiral nature of charge carriers in graphene has been linked to a number of unusual charge transport phenomena, including suppression of localization and minimum conductivity. A crucial ingredient to understand such phenomena in graphene is the ability to correlate the charge transport characteristics with the corresponding internal potential landscape and band-bending. With a scanning optical microscope operated at LHe temperature we have measured lateral photo-current in graphene-based devices. Spatial maps of photocurrent obtained using this approach contain information about the distribution of lateral electrostatic fields in these devices. At room temperature, band-bending induced by metal contacts has been observed. At cryogenic temperature, formation of electron-hole puddles leads to spatially inhomogeneous maps of photocurrent, which become very sensitive to the applied gate voltage.

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