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Photon Induced Transport in Graphene-Boron Nitride-Graphene Heterostructures NITYAN NAIR, NATHANIEL GABOR, QIONG MA, Massachusetts Institute of Technology, KENJI WATANABE, TAKASHI TANIGUCHI, National Institute for Materials Science, Japan, WENJING FANG, JING KONG, PABLO JARILLO-HERRERO, Massachusetts Institute of Technology — Monolayer graphene, an atomically thin sheet of hexagonally oriented carbon, is a zero band gap conductor that exhibits strong electron-electron interactions and broadband optical absorption. By combining MLG and hexagonal boron nitride into ultrathin vertical stacks, experiments have demonstrated improved mobility, Coulomb drag, and field-effect tunneling across few-layer boron nitride barriers. Here, we report on the photon-induced transport of charge carriers through a graphene-boron nitride-graphene heterostructure. The dependence of the generated photocurrent on photon energy and interlayer bias voltage is studied. The photocurrent is found to depend strongly on both these parameters, showing several interesting features. We consider several processes that may serve to explain the rich dependence of photoconductance on applied bias voltage and photon energy.

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