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Properties of Edge States at the Graphene P-N Junction Interface SON LE, NIKOLAI KLIMOV, DAVID NEWELL, NIST - Natl Inst of Stds Tech, JUN YAN, University of Massachusetts, Amherst, JI UNG LEE, SUNY PI, NY, CURT RICHTER, NIST - Natl Inst of Stds Tech — The Landau level edge states from the p- and the n-section of a graphene P/N junction (*pn*J) interact with each other differently across the junction depending upon the properties of the junction and the graphene. Full equilibration was reported for a two terminal graphene *pn*J device in Williams et al. [1]. In our four-terminal device, however, only the lowest Landau level edge state is equilibrated across the *pn*J [2]. When the two devices are compared, the LL energy spacings, the length of the edge states along the *pn*J interface, and the carrier mobility are similar. Electrostatic simulations for our device geometry and that of [1] contrast the rate of change of the electrostatic potential across the *pn*Js. Edge states at an electrostatically smooth junction are spatially further apart than those at a relatively abrupt junction, which decreases the probability of edge states mixing. Thus, we attribute the difference in equilibration in our device and that of [1] to the dramatic difference in the shape of the electrostatic junction. [1] J. R. Williams, L. DiCarlo, and C. M. Marcus, Science 317, 638 (2007) [2] Nikolai N. Klimov, Son T. Le, *et al.*, Phys. Rev. B: Rapid Comm. (2015

Son Le
NIST - Natl Inst of Stds
Tech

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