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Transport Properties of Crystallographically Aligned Heterostructures of Graphene and Hexagonal Boron Nitride PENG WANG, BIN CHENG, TENGFEI MIAO, OLEG MARTYNOV, MARC BOCKRATH, Univ of California - Riverside — Graphene and hexagonal boron nitride (hBN) heterostructures have been heavily studied due to graphene's high electronic mobility in this system. Hexagonal BN also shows possibilities to alter graphene's electronic properties. Recently several research groups have demonstrated accurate placement of graphene on hBN with crystallographic alignment[1][2][3]. Due to the resulting superlattice formed in the graphene/hBN heterostructures, an energy gap, secondary Dirac Points, and Hofstadter quantization in a magnetic field have been observed. However, many aspects of the electronic properties of graphene/hBN heterostructures remain unexplored. Using aligned layer transfer we are able to produce graphene/hBN heterostructures with 1 degree alignment accuracy, and measure the transport properties of the resulting systems. We will discuss our latest transport data, which contribute towards a greater understanding the electron motion in the graphene/hBN interface. [1] P. A. Ponomarenko et al., Nature 497, 594-597 (2013). [2] C. R. Dean, et al., Nature 497, 598-602(2013). [3] B. Hunt, et al., Science 340, 1427(2013).

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