

Abstract Submitted
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**The vertical transport properties
of misoriented graphene/hexagonal-boron-nitride/graphene heterostructure devices**¹ SUPENG GE, MASUM HABIB, ROGER LAKE, Univ of California

- Riverside, LATTE TEAM — Hexagonal boron nitride (hBN) has an atomically smooth surface free of dangling bonds, minimal lattice mismatch with graphene and a wide band gap, which makes it an ideal insulator material for graphene devices. Recently, transistor devices made with the few layers of hBN sandwiched between two layers of graphene has attracted attention since interesting phenomenon such as negative differential resistance has been observed. In experiment, the device fabrication usually gives rise to random orientation of interfaces. To have a better understanding of the effect of misorientation, we employed non-equilibrium Greens function (NEGF) method to calculate transmission across graphene/hBN/graphene hererostructures devices. We find that the rotation can cause the transmission to change by more than one order of magnitude. The resistance and current as functions of h-BN layer thickness, commensurate rotation angles, gating voltage, and bias voltage are described.

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