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Electronic Transport in Dual Gated Bilayer Graphene THITI TAYCHATANAPAT, Physics Department, Harvard University, PABLO JARILLO-HERRERO, Physics Department, MIT — The ability to control the band gap in bilayer graphene by applying a perpendicular electric field has attracted a lot of interest for its potential in nanoelectronic devices based on this material. Here, we examine the electronic properties of top-and-bottom gated bilayer graphene devices. The local top gate and global back gate enable us to control the size of the band gap and the Fermi energy separately and hence create an insulating state in bilayer graphene. We observe a transport gap of $\sim$4 meV at electric displacement of $\sim$2.5 V/nm. In addition, we use quantum point contact geometries to study transport in laterally confined bilayer graphene constrictions. We observe a non-monotonic resistance behavior as the transverse electric field is increased, which we attribute to the onset of conductance through the nanoconstriction.

Thiti Taychatanapat
Physics Department, Harvard University, Cambridge, MA 02138

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