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Tunable band gaps in bilayer graphene-BN heterostructures ASHWIN RAMASUBRAMANIAM, University of Massachusetts Amherst, DORON NAVEH, ELIAS TOWE, Carnegie-Mellon University — We investigate band-gap tuning of bilayer graphene between hexagonal boron nitride sheets, by external electric fields. Using density functional theory, we show that the gap is continuously tunable from 0 to 0.2 eV, and is robust to stacking disorder. Moreover, boron nitride sheets do not alter the fundamental response from that of free-standing bilayer graphene, apart from additional screening. Our calculations suggest that graphene-boron nitride heterostructures could provide a viable route to graphene-based electronic devices.

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