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Interaction-Driven Insulating States in Bilayer Graphene

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Bilayer graphene (BLG) at the charge neutrality point (CNP) is unstable to electronic interactions, and expected to host a ground state with spontaneously broken symmetries. Here I will present our transport spectroscopy measurements on singly- and dual-gated suspended BLG devices, which have field effect mobility values up to 250,000 and 100,000 cm²/Vs, respectively. We observe an insulating state at CNP with a gap ~ 2 meV, which can be closed by elevated temperature, finite doping or a perpendicular electric field of either polarity. For magnetic field $B > 1$ T, the gap increases linearly with B . Our work contributes towards understanding the rich interaction-driven physics in BLG.