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Electric Field Effects and Landau Level Crossing in Suspended Bilayer Graphene KEVIN MYHRO, YONGJIN LEE, MICHAEL DEO, DAVID TRAN, JEANIE LAU, UCR Dept. of Physics and Astronomy, JEANIE LAU GROUP TEAM — Bilayer graphene offers a versatile 2D platform for electron transport study due to its gate tunable band gap, large tensile strength and ultra-high electronic mobility. Here we report two-terminal differential conductance measurements of dual-gated suspended bilayer graphene devices as a function of applied back gate and top gate voltages in zero and finite magnetic fields. Multi-level electron beam lithography defines contactless top gates and the bilayer graphene flakes are suspended by wet-etching the oxide layer. Successful current annealing allows us to reach high mobility and an insulating state at low magnetic fields. We investigate the role of the applied perpendicular electric field from top-gated devices, compare results to single-gated measurements, and characterize Landau Level crossings as a function of electric field, charge carrier density and magnetic field.

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