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Transport phenomena of suspended graphene in the quantum Hall regime HSIN-YING CHIU, CHING-TZU CHEN, DAVID DIVINCENZO, PHAEDON AVOURIS, IBM Thomas J. Watson Research Center — Towards the goal of making qubits in graphene, it is important to develop graphene quantum point contact for quantum-gate operations. Klein tunneling effect implies that confining charge carriers in graphene using external potential is challenging. Hence, we resort to electric-field controlled band gap opening for charge confinement. We have successfully fabricated high quality suspended few-layer graphene devices with local electrostatic gates. In this talk, we present our observation of voltage-controlled band gap opening and anomalous quantum Hall features upon applying vertical electrical field, revealing rich physics of symmetry breaking in the few-layer graphene system.

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