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Electron transport in top-gated graphene nanoribbons MELINDA HAN, INANC MERIC, KENNETH SHEPARD, PHILIP KIM, Columbia University — We report on studies of electron transport in top-gated graphene nanoribbons. Graphene nanoribbon devices are fabricated from mechanically exfoliated graphene. A metal top gate is then fabricated with a thin gate dielectric over both the graphene nanoribbon and the wide graphene leads, avoiding the formation of p-n junctions in the channel. The increased capacitive coupling suppresses the effects of Coulomb charging, and allows us to quantify the relative contribution of Coulomb interactions in the low-bias transport. Additionally, high bias transport in top-gated nanoribbons shows good field effect transistor characteristics, including strong saturation behavior for ribbons with a range of lengths.

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