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Potential barriers in graphene[1] NIMROD STANDER, DAVID GOLDHABER-GORDON, BENJAMIN HUARD, JOEY SULPIZIO, KATHRYN TODD, BO YANG, Stanford University — Graphene is a single sheet of graphite. Some of its remarkable electronic properties have been predicted over the past 6 decades, but only recently, the Geim group at Manchaster succeeded in fabricating graphene and measuring the Quantum Hall effect. These measurements agreed with earlier predictions by observing plateaus at half-integer values and triggered an immense theoretical and experimental effort. It was also predicted that the tunneling through a potential step in graphene is highly anisotropic, and occurs with probability 1 at normal incidence, due to the chiral nature of its quasiparticles. This behavior can be investigated in different potential configurations, such as pn junctions or npn barriers in graphene. In this talk, I will present our experimental work on electronic transport through a tunable potential barrier in top gated graphene devices. I will show that the experiments we have done, depend on the disorder and on the profile of the potential rise across the graphene sheet. Therefore, they can also be seen as as a tool to investigate scattering and screening properties in graphene.

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