

Abstract Submitted
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Low temperature scanning probe imaging of electron transport in graphene nanostructures¹ JESSE BEREZOVSKY, ROBERT WESTERVELT, Harvard University — Experiments on the transport properties of graphene over the last several years have revealed numerous unusual and fascinating results. These studies typically rely on lithographically patterned contacts and gates that can obscure effects arising due to spatially varying properties. Using a biased scanning probe tip, we can create a local gate or scattering potential and observe the resulting change in the transport properties of a graphene structure. Simulations show that this technique can image the fluctuating potential in a graphene sheet with a spatial resolution of tens of nanometers. By patterning the graphene into a nanowire or nanoconstriction, the local potential of the tip may be used to probe the dependence of the confinement-induced energy gap on the local atomic structure of the edges. These types of measurements provide a means for directly imaging the flow and behavior of electrons in graphene devices.

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