

Abstract Submitted
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Scanning gate microscopy on graphene in the quantum Hall regime JAMES HEDBERG, YOICHI MIYAHARA, MICHAEL HILKE, GUILLAUME GERVAIS, PETER GRÜTTER, McGill University, JULIEN RENARD, JOSHUA FOLK, University of British Columbia — Scanning Gate Microscopy was performed on monolayer graphene devices in the quantum hall regime. The devices studied consisted of exfoliated graphene deposited on SiO₂, etched in a Hall Bar configuration, and electrically contacted by standard lithographic techniques. Using a custom built scanning probe microscope (SPM), operating at liquid Helium temperatures and below, in magnetic fields up to 16 T, we spatially mapped the position dependent effects of a movable gate, i.e. the charged tip of the SPM, on the conductivity of the graphene device. Using a global backgate to modulate the carrier density, we can visually observe the transitions between filling factors. Striking features are observed in the resistance versus position maps, offering insights into the microscopic properties of graphene in the quantum Hall regime.

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