

FRACTIONAL QUANTUM HALL STATES IN GRAPHENE

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Two-dimensional electrons in graphene are known to behave as massless fermions with Dirac-Weyl type linear dispersion near the Dirac crossing points that results in significant modification of inter-electron interactions. The fractional quantum Hall effect was predicted to exist in monolayer graphene [V. Apalkov and T.C., PRL (2006)] and was subsequently observed in suspended graphene [Du et al., Nature (2009); Bolotin et al., Nature (2009), Abanin et al., PR B (2010)]. In biased bilayer graphene, we expect phase transitions from an incompressible fractional quantum Hall state to a compressible state, that can be induced by tuning the bandgap at a given electron density.