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Measurements of weak localization of graphene in inhomogeneous magnetic fields - DTU Orbit (08/11/2017)

Measurements of weak localization of graphene in inhomogeneous magnetic fields

Weak localization in graphene is studied in inhomogeneous magnetic fields. To generate the inhomogeneous field, a thin film of type-II superconducting niobium is put in close proximity to graphene. A deviation from the ordinary quadratic weak localization behavior is observed at low fields. We attribute this to the inhomogeneous field caused by vortices in the superconductor. The deviation, which depends on the carrier concentration in graphene, can be tuned by the gate voltage. In addition, collective vortex motion, known as vortex avalanches, is observed through magnetoresistance measurements of graphene.

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