

Abstract Submitted
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Lifshitz Transitions in Bias-Resonant Twisted Bilayer Graphene

STEVE CARTER, HRIDIS PAL, MARKUS KINDERMANN, Georgia Institute of Technology — Topological transitions of the Fermi surface (Lifshitz transitions) have been shown to cause discontinuities in materials properties. One such transition has been predicted to occur in AB-stacked bilayer graphene.^[1] In this talk we discuss incommensurately twisted bilayer graphene with an interlayer bias energy.^[2] New physics emerges when the bias energy is tuned into resonance with the kinetic energy cost of interlayer hopping due to the mismatch between the Dirac points of the twisted layers. We show that the system near resonance is described by relatively simple low-energy theories that nevertheless produce a vast number of Lifshitz transitions. An exhaustive description of the topological transitions in a universal regime at weak interlayer coupling will be presented. [1] Y. Lemonik et al. Phys. Rev. B, 82:201408 (2010). [2] H.K. Pal et al. arXiv:1409.1971 (2014).

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