Magneto transport in bilayer graphene cavities

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Abstract

The remarkable sample quality of bilayer graphene in combination with the unprecedented electronic control of the band-structure makes bilayer-graphene an excellent platform for electron optics. While the purity of the system allows for ballistic transport on the micrometer scales [1,2], the trigonal warping of the band structure close to each K points induces a valley dependent selection of momenta leading to unique transport and scattering properties [3,4]. Interested in the interplay of symmetry breaking induced by a variety of all-electronic gate confinements and the trigonal warping, we implement various quantum mechanical tight binding models as well as semiclassical simulations and deploy them to investigate magneto transport through bilayer graphene cavities.
[2]L.
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References

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[3] C. Gold et al, Phys. Rev. Lett. 127 (2021), 046801
[4] J.K. Schrepfer et al, Phys. Rev. B 104 (2021), 155436

Figures

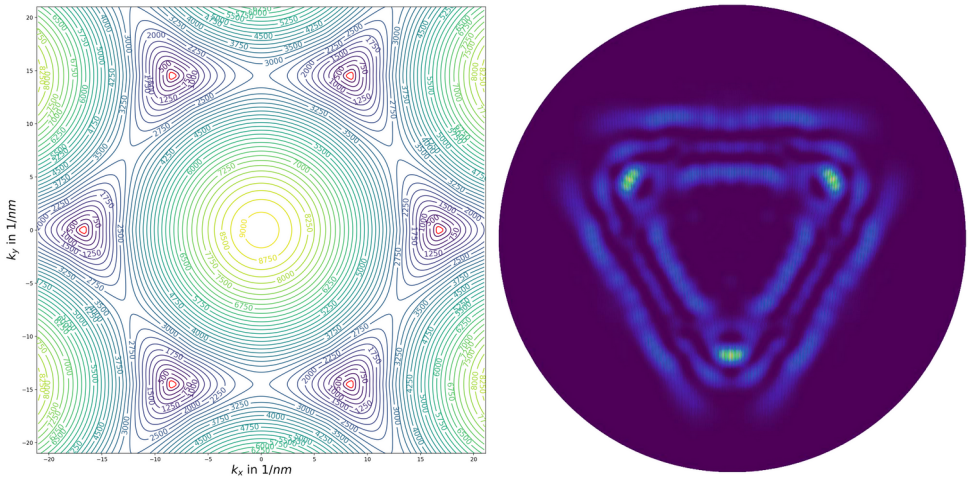

Figure 1: Fermis surface of BLG and LDOS of electron in a circular BLG cavity.