

Modulating the Lifshitz Transitions in Tetralayer Graphene by hydrostatic pressure

Albin Márffy

Bálint SZENTPÉTERI, Xueshi GAO, Che SHI, Bálint FULOP, Endre TÓVÁRI, Péter MAKK, Chun Ning LAU, and Szabolcs CSONKA

Dept. of Physics, BME Budapest University of Technology and Economics, Budapest, Hungary
marffya@edu.bme.hu

The Fermi level and the band structure of van der Waals materials can easily be tuned hence they offer an ideal platform for exploring the Lifshitz transition, a change in the topology of a material's Fermi surface. By applying hydrostatic pressure on a tetralayer graphene that host two intersecting Dirac bands, we demonstrate that the multiple Lifshitz transitions and multiband transport observed at ambient pressure[2] is widely affected by the high hydrostatic pressure resulting in a different dependence of conductivity on the charge density n and out-of-plane electric field D , quantum Hall sequences and Landau level crossings that is influenced by n , D , and B .

References

- [1] B. Fülöp et al., Journal of Appl. Phys., 130 (2021), 064303
- [2] Y. Shi et al., Phys. Rev. Lett., 120 (2018), 096802