

# Correlated phases near the van Hove singularity in Bernal bilayer graphene

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Diverging density of states can lead to correlated phases in low dimensional systems. This includes the graphene family that hosts electric-field controlled Lifshitz transitions and concomitant van-Hove-singularities in the density of states. Here, we present the observation of experimental signatures consistent with various interaction-driven states in Bernal bilayer graphene including the fractional metals of Stoner type. More prominently, we have found a Chern-insulating Wigner-Hall crystalline state as well as two exotic metallic states, which all emerge near the Lifshitz transitions and survive at zero magnetic field [1]. Evidencing interacting physics in this simple and reproducible system offers a fertile ground for exploring intricating many-body physics.

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## References

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[1] Seiler, A. M. *et al.*, arXiv:2111.06413 (2021)