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【104】Dipole charge density ordering in bilayer semiconductors

Tuesday 5 September 2023 15:00 (15 minutes)

Advances in the manipulation of van der Waals materials have shown that bilayers offer a unique platform for studying strongly correlated physics in two-dimensions (2D). Bilayers are importantly different from monolayers in that there exist long-range interactions between electrons in both the intra- and inter-layer channels, which differ only slightly. We show that the electronic charge susceptibility has peaks arising from scattering across the Fermi surfaces, not seen in the usual Lindhard function. In a bilayer system, these peaks give rise to an enhanced response of out-of-plane dipoles to local potential differences across the layers. This response is not diminished by screening and becomes larger in the low-density limit.

Theoretical Work

Theory

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