

Abstract Submitted
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Hofstadter spectrum in MoS₂¹ YEN-HUNG HO, Physics, National Tsing Hua University, Taiwan, WU-PEI SU, Physics and Texas Center for Superconductivity, University of Houston, TX, MING-FA LIN, Physics, National Cheng Kung University, Taiwan — In studying the Hofstadter problem of monolayer molybdenum disulfide (MoS₂), we systematically demonstrate the magnetic energy spectra due to various hoppings between *d*-orbital electrons. The magnetoelectronic spectrum shows a mirror symmetry as a result of the particle-hole symmetry in the Bloch bands. At small field, specific Landau fan diagrams can be ascribed to certain Bloch-band singularities. In the spectrum of real MoS₂, we further illustrate a breaking of spectral symmetry, the spin and valley polarization, and a flux-dependent energy gap. Our numerical results can facilitate the qualitative understanding of topological nature of *d*-bands and provide a basis for exploring the Landau levels in transition-metal dichalcogenides.

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