

Abstract Submitted  
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**Geometrical Effects in Orbital Magnetism** YANG GAO, UT Austin, SHENGYUAN YANG, SUTD, QIAN NIU, UT Austin — Within the wave-packet semi classical approach, the Bloch electron energy is derived to second order in the magnetic field and classified into gauge-invariant terms with clear physical meaning, yielding a fresh of the complex behavior of orbital magnetism. The Berry curvature and quantum metric of the Bloch states rise to a geometrical magnetic susceptibility, which can be dominant when bands are filled up to a small energy gap. is also an energy polarization term, which can compete with the Peierls-Landau and Pauli magnetism on a Fermi surface. These, and an additional Langevin susceptibility, can be calculated from each single band, leaving the Van Vleck susceptibility the only term truly from interband coupling.

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