

Title: A field theory approach to orbital magnetic responses in interacting multi-band systems

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Abstract: Orbital magnetic responses originate from the orbital motions of the electrons in a crystalline solid subject to an external magnetic field. They reveal informations of the Bloch wave function and the symmetries tied to it. In this talk, I present a field theory that systematically compute orbital magnetic responses in interacting multiband systems to all orders in an external magnetic field by computing the thermodynamic potential. In particular, the leading order response corresponds to spontaneous orbital magnetization, which generalizes the orbital magnetization in non-interacting systems to the interacting cases.