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Floquet engineering of realistic models for frustrated magnets

QUITO, Victor Luiz[1]; COSTA, João Pedro Carvalho[1]

joaopedro137@usp.br

[1]Instituto de Física de São Carlos - USP

Spin liquids are an intriguing state of matter where the spins in a lattice are in a disordered but highly entangled state due to magnetic frustration. The Kitaev model for spin-1/2 moments on a honeycomb lattice (1) describes an exactly solvable model for a spin liquid phase. Some materials whose low-energy sectors can be described by a honeycomb spin-1/2 model include ruthenates and iridates, where the relevant electronic orbitals are modeled with a multi-orbital Hubbard model (2). The effective low-energy spin models of these materials may not be, however, in a spin liquid phase. Floquet engineering provides an extrinsic way to manipulate the coupling constants by applying periodic light (3). In this work, we consider the Floquet engineering of ruthenate and iridate models with the goal of enhancing frustration and driving the system into a spin-liquid phase. We consider different types of polarized and partially polarized light profiles for that.

Palavras-chave: Spin liquids; Ruthenates and Iridates; Floquet engineering.

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