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(I) Exotic phases of spin-3/2 fermions in Rarita-Schwinger-Weyl semimetals

Tuesday 20 June 2023 09:30 (30 minutes)

Topological semimetals can host novel fermionic particles whose intriguing interactions and many-body phases can be studied experimentally. I will discuss the particularly exciting class of Rarita-Schwinger-Weyl semimetals hosting spin-3/2 electrons with linear dispersion at a four-fold band crossing point, realized experimentally in quantum materials in the last years. I will combine symmetry considerations, perturbative renormalization group analysis, and mean-field theory to discern several exotic interacting phases that are prone to emerge in the strongly correlated regime.

Keyword-1

Topological Semimetals

Keyword-2

Renormalization Group

Keyword-3

Quantum phase transitions

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