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Using neutron to probe magnetic symmetries of quantum materials

Symmetries fundamentally govern the emergent collective behaviors in quantum materials. Beyond crystallographic symmetries, magnetic symmetries, which arising from ordered spin configurations, also play a critical role in determining physical properties. Probing the full symmetry landscape, including its evolution under external stimuli, is essential for understanding exotic phases and guiding the design of materials with functionalities. In this talk, I will present my recent work using neutron techniques to resolve nontrivial magnetic textures involving chirality and toroidicity, and to investigate their interplay with electric degrees of freedom, thereby establishing direct links between magnetic space group symmetries and macroscopic physical responses.

Topical Area

Hard matter: quantum, electronic, semiconducting materials

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