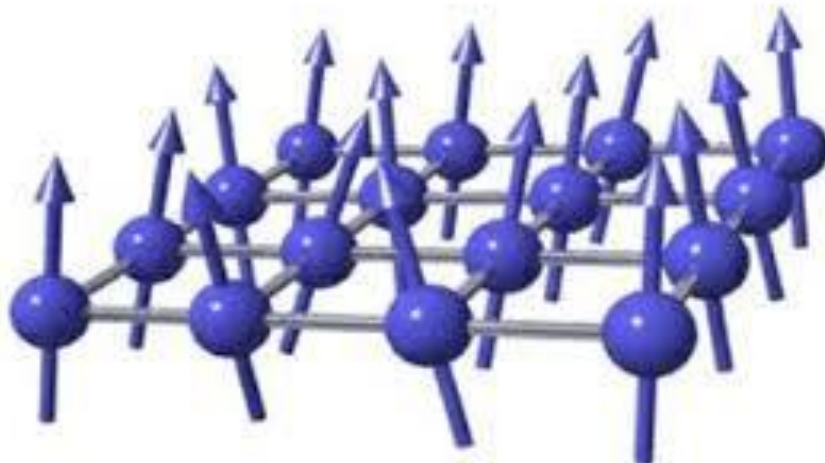




COLLOQUIUM



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Spectral Gap Transition for a Family of Quantum Spin Systems

Abstract

With the ground-breaking advances in cold atom experiments over the previous decades, there is great interest in the properties of these systems and their mathematical description. At low temperatures, the behavior of the system is heavily dependent on whether or not there is a positive distance between the ground state energy and excited state energies in the spectrum of the Hamiltonian. Even for well-studied models like the quantum Heisenberg ferromagnet and anti-ferromagnet models, proving the existence or non-existence of this positive distance, called a spectral gap, is generally quite difficult. In this talk, I will present a family of quantum spin systems where the existence of the spectral gap can be determined for all members of the family. I will introduce techniques of proof and discuss possible extensions.

3:00-4:30 p.m., Friday, May 5th in McLane 162