Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad – 500 046

Seminar

Monopole excitations in the Kagome Dirac spin liquid

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The ground state of the spin-1/2 antiferromagnetic Heisenberg model on the Kagome lattice is a quantum spin liquid, but its exact nature has been heavily debated. Although there has been growing evidence for a U(1) Dirac spin liquid state, the problem is still open. In our work, we investigate the stability of the Dirac state to chiral perturbations, by constructing monopole excitations and studying their energetics. We use the Variational Monte Carlo (VMC) technique based on Gutzwiller projected fermionic wavefunctions. In my talk, I will introduce quantum spin liquids, and motivate the problem at hand. I will briefly outline some numerical techniques used to study spin liquids, and discuss the key ideas behind the VMC approach. Finally, I will present our results on the nature of the monopole excitations. The talk is based on the recent preprint: https://arxiv.org/abs/2307.01149

Thursday, Aug 3rd 2023

4:00 PM (Tea / Coffee 03.45 PM)

Seminar Hall, TIFR-H