

## 2D Kagome Antiferromagnets: Quantum Spin Liquids and beyond

2D strong correlated system has been a center topic in strong correlated electrons system for nearly a center. However, concrete understanding is obstructed by computational complexity and non-perturbative nature of quantum many body system. This talk focuses on 2D spin system with geometrical frustrations that forms a exotic state termed “Quantum Spin Liquid”. Specifically on Kagome lattice, frustration has induced fractionalize, Dirac type massless excitation whose excitation is described by a low-energy effective  $U(1)$  gauge theory, however, a concrete top-down proof of it’s validity is lacking. Here we used Monte Carlo methods to test the energy of Dirac Spin Liquid ground state and investigate it’s non-perturbative behaviour under magnetic fields. These properties might be observed in real Kagome antiferromagnets materials.

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