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Extent of the Z2 topological phase in the quantum dimer model

MARC SCHULZ, FIONA J BURNELL, Univ of Minn - Minneapolis — The possibility that topological order is realized in the anti-ferromagnetic Heisenberg model on the Kagome lattice has been supported by increasing numerical evidence over the last years. In particular, effective low-energy descriptions in terms of quantum dimers models provide valuable insights. It has been shown that the phase diagram of the quantum dimer model contains a point at which the Hamiltonian is exactly solvable and realizes a Z2 topological phase. We study the extent of this phase around the exactly solvable point. Therefore we consider the low-energy spectrum which we determine by means of high-order perturbation theory.

Marc Schulz
Univ of Minn - Minneapolis

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