

Abstract Submitted
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Exactly solvable 3D quantum model with finite temperature topological order ISAAC KIM, Institute of Quantum Information — We present a family of exactly solvable spin- $\frac{1}{2}$ quantum hamiltonians on a 3D lattice. The degenerate ground state of the system is characterized by a quantum error correcting code whose number of encoded qubits are equal to the second Betti number of the manifold. These models 1) have solely local interactions 2) admit a strong-weak duality relation with an Ising model on a dual lattice 3) have topological order in the ground state, some of which survive at finite temperature. The associated quantum error correcting codes are all non-CSS stabilizer codes.

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