**Quantum phase transition from magnetic to topological order**
ALIOSCIA HAMMA, WEN ZHANG, STEPHAN HAAS, DANIEL LIDAR, University of Southern California — We present a numerical study of the quantum phase transition from the magnetically ordered phase to the topologically ordered phase of a $n$-spins 1/2 system. We show that the derivative of von Neumann entropy of a plaquette diverges at the critical point, signaling a second order quantum phase transition. Moreover, we compute the finite-size scaling of the Topological Entropy, showing how this quantity detects the passage to the topologically ordered phase.

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