The nature of quantum phase transition in quantum compass model HAN-DONG CHEN, Department of Applied Physics, Stanford University and Department of Physics, UIUC, CHEN FANG, Department of Physics, Purdue University, JIANGPING HU, Department of Physics, Purdue University, HONG YAO, Departmenf of Physics, Stanford University — In this work, we show that the quantum compass model in two dimension can be mapped to a fermionic model with local density interaction and the quantum phase transition point at the symmetric point Jx=Jz marks a first order phase transition.

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