

Abstract Submitted
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Exactly Solvable Topological Chiral Spin Liquid with Random Exchange¹ VICTOR CHUA, GREGORY A. FIETE, Department of Physics, University of Texas at Austin — We extend the Yao-Kivelson decorated honeycomb lattice Kitaev model [Phys. Rev. Lett.99, 247203 (2007)] of an exactly solvable chiral spin liquid by including disordered exchange couplings. We have determined the phase diagram of this system and found that disorder enlarges the region of the topological non-Abelian phase with finite Chern number. We study the energy level statistics as a function of disorder and other parameters in the Hamiltonian, and show that the phase transition between the non-Abelian and Abelian phases of the model at large disorder can be associated with pair annihilation of extended states at zero energy. Analogies to integer quantum Hall systems, topological Anderson insulators, and disordered topological Chern insulators are discussed.

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