

Abstract Submitted
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A quantum spin liquid with a large topological degeneracy¹ OLEG TCHERNYSHYOV, HAOYU WANG, Johns Hopkins University, YUAN WAN, Perimeter Institute — We present a model of a quantum spin liquid in two dimensions with a large topological degeneracy. The model has spins of length $S = 1/2$ on sites of a triangular lattice interacting via a 6-spin term. As in models of Kitaev and Wen [1-3], elementary building blocks in our model are strings of several distinct types. Ends of these strings are elementary particles: 4 bosons and 3 fermions. Particles of different types are mutual semions. The degeneracy of the ground state on a torus is $2^{7-1} = 64$. Elementary excitations of the model are boson-fermion pairs, which come in $3 \times 4 = 12$ distinct types. [1] A. Kitaev, Ann. Phys. **303**, 2 (2003). [2] X.-G. Wen, Phys.Rev.Lett. **90**, 016803 (2003). [3] A. Kitaev, Ann. Phys. **321**, 2 (2006).

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