Algebraic spin liquid in an exactly solvable spin model HONG YAO, SHOU-CHENG ZHANG, STEVEN KIVELSON, Stanford University — We have introduced an exactly solvable quantum spin-3/2 model on the square lattice. Its ground state is a spin liquid with half integer spin per unit cell. The fermionic excitations are gapless with a linear dispersion, while the topological "vison" excitations are gapped. Moreover, the massless Dirac fermions are stable against any small perturbations with time reversal symmetry. Thus, this model is, to the best of our knowledge, the first exactly solvable model whose ground state is an "algebraic spin liquid" with half integer spin per unit cell.

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