Gapped spin liquid with Z_2-topological order for kagome Heisenberg model JIA-WEI MEI, Department of Materials Science and Engineering, University of Utah, JI-YAO CHEN, Department of Physics, Tsinghua University, China, HUAN HE, Department of Physics, Princeton University, XIAO-GANG WEN, Department of Physics, Massachusetts Institute of Technology — We apply symmetric tensor network state (TNS) to study the nearest neighbor spin-1/2 antiferromagnetic Heisenberg model on kagome lattice. We keep track of the global and gauge symmetries in TNS update procedure and in tensor renormalization group (TRG) calculation. We use imaginary-time evolution to obtain the variational ground state, and use symmetric TRG to compute the modular matrices. We find that the ground state is a gapped spin liquid with the Z_2-topological order (or toric code type). The correlation length is about 10 unit cell length.

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