

Abstract Submitted  
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**Signatures of Dirac cones in a DMRG study of the Kagome Heisenberg model** YIN-CHEN HE, Harvard University, Cambridge, MICHAEL P. ZALETEL, Station Q, Santa Barbara, MASAKI OSHIKAWA, University of Tokyo, Tokyo, FRANK POLLMANN, Max-Planck-Institut, Dresden — The anti-ferromagnetic spin-1/2 Heisenberg model on a kagome lattice is one of the most paradigmatic models in the context of spin liquids but yet the precise nature of its ground state is not understood. We use large scale density matrix normalization group simulations (DMRG) on infinitely long cylinders and find indications for the formation of a gapless Dirac spin liquid. First, we demonstrate using adiabatic flux insertion that the spin gap is much smaller than estimated from previous DMRG simulation. Second, we find that the momentum dependent excitation spectrum extracted from the transfer matrix exhibits Dirac cones that perfectly matches the ones found for a  $\pi$ -flux free fermion model (the parton mean-field ansatz of a  $U(1)$  Dirac spin liquid).

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