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Quantum dimer model for the spin-1/2 kagome Z2 spin liquid IOANNIS ROUSOCHATZAKIS<sup>1</sup>, Leibniz Institute for Solid State and Materials Research, IFW Dresden, and Max Planck Institute for the Physics of Complex Systems, Dresden Germany, YUAN WAN, OLEG TCHERNYSHYOV, Department of Physics and Astronomy, The Johns Hopkins University, Baltimore, Maryland 21218, FREDERIC MILA, Institute of Theoretical Physics, Ecole Polytechnique Federale de Lausanne, CH-1015 Lausanne, Switzerland — We revisit the description of the low-energy singlet sector of the spin-1/2 Heisenberg antiferromagnet on kagome in terms of an effective quantum dimer model. With the help of exact diagonalizations of appropriate finite-size clusters, we show that the embedding of a given process in its kagome environment leads to dramatic modifications of the amplitudes of the elementary loop processes, an effect not accessible to the standard approach based on the truncation of the Hamiltonian to the nearest-neighbour valence-bond basis. The resulting parameters are consistent with a Z2 spin liquid rather than with a valence-bond crystal, in agreement with the last density matrix renormalization group results.

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