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Detecting crystal symmetry fractionalizations in Z_2 spin liquids on kagomé lattice – insights from quantum dimer models YANG QI, Perimeter Institute for Theoretical Physics, LIANG FU, Massachusetts Institute of Technology — In topological quantum spin liquid states, the crystal symmetry operations often act on fractionalized spinon excitations in a fractionalized way. These features are important for identifying the symmetry enriched topological orders of the spin liquid states. In this work we propose a simple way to detect signatures of such crystal symmetry fractionalizations from the symmetry representations of the ground state wave function. We demonstrate our method on different exactly solvable quantum dimer models on the kagomé lattice, and show that it can also be applied to generic dimer and spin models. Particularly our method can be used to distinguish several proposed candidates of Z_2 spin liquid states on the kagomé lattice.

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