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Phases of the Maple Leaf Antiferromagnet

The Heisenberg antiferromagnet on the maple leaf lattice is a recent candidate host for spin liquid phases ([1, 2, 3]) and can also be realized experimentally both in natural minerals ([4, 5]) as well as synthetic compounds ([6, 7]). Employing exact diagonalization we investigate different ground states and map out the phase diagram under variations of three symmetry-inequivalent nearest-neighbor bonds. In particular, we focus on the presence of long-range magnetic order and the transition into the dimer phase, trying to elucidate conflicting reports originating from differing techniques (see e.g. [3] vs. [8]) through exact results. Lastly, we discuss the possibility of emergent quantum spin liquids in the nearest-neighbor antiferromagnet.

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