

Abstract Submitted  
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**Iridate spin models: magnetism, 3D spin liquids and an infinite-D entanglement approximation** ITAMAR KIMCHI, JAMES ANALYTIS, ASHVIN VISHWANATH, University of California, Berkeley — We present three-dimensional threefold-coordinated structures for iridates which may generate Kitaev-type magnetic exchanges. The resulting solvable 3D quantum spin liquid exhibits the uniquely 3D property of stability to finite temperature ( $T_c \sim J_k/100$ ). Adding Heisenberg couplings spoils exact solubility; however, the large loop length  $\ell$  of the lattice suggests an approximation with large  $\ell \rightarrow \infty$ . The Kitaev-Heisenberg model can be solved on the resulting Bethe lattice using tensor product states; we present the phase diagrams, finding multiple magnetic order parameters and identifying gapped spin liquid phases by an entanglement fingerprint.

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