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Effective field theory, edge states and classification of symmetric Z2 spin liquids YUAN-MING LU, ASHVIN VISHWANATH, University of California, Berkeley — Growing numerical evidence for gapped Z2 spin liquids in physically realistic spin models provides strong motivation for a deeper theoretical understanding of their properties. In particular the interplay of symmetry and topological order is known to lead to distinct phases of matter, symmetry enriched topological states, which differ in the action of symmetry on the topological excitations. In this work we present a Chern-Simons field theory description of symmetric spin liquids, which allows for a complete classification of these states as well as access to their physical properties such as edge states and quasiparticle quantum numbers. As an application we show that there are 6 distinct classes of Z2 spin liquids in the presence of a global Ising (Z2) symmetry.

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