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Chiral projected entangled-pair state with topological order[1]
SHUO YANG, Perimeter Institute for Theoretical Physics, Waterloo, ON, N2L 2Y5, Canada, THORSTEN WAHL, HONG-HAO TU, Max-Planck Institute for Quantum Optics, Hans-Kopfermann-Str. 1, D-85748 Garching, Germany, NORBERT SCHUCH, JARA Institute for Quantum Information, RWTH Aachen University, D-52056 Aachen, Germany, J. IGNACIO CIRAC, Max-Planck Institute for Quantum Optics, Hans-Kopfermann-Str. 1, D-85748 Garching, Germany — We show that projected entangled-pair states (PEPS) can describe chiral topologically ordered phases. For that, we construct a simple PEPS for spin-1/2 particles in a two-dimensional lattice. We reveal a symmetry in the local projector of the PEPS that gives rise to the global topological character. We also extract characteristic quantities of the edge conformal field theory using the bulk-boundary correspondence.

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