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Anyonic entanglement renormalization ROBERT KOENIG, ERSEN BILGIN, Institute for Quantum Information, Caltech — We introduce a family of variational ansatz states for chains of anyons which optimally exploits the structure of the anyonic Hilbert space. This ansatz is the natural analog of the multi-scale entanglement renormalization ansatz for spin chains. In particular, it has the same interpretation as a coarse-graining procedure and is expected to accurately describe critical systems with algebraically decaying correlations. We numerically investigate the validity of this ansatz using the anyonic golden chain and its relatives as a testbed. This demonstrates the power of entanglement renormalization in a setting with non-abelian exchange statistics, extending previous work on qudits, bosons and fermions in two dimensions.

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