

Abstract Submitted
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A simple quasi-1D model of Fibonacci anyons¹ DAVID AASEN, ROGER MONG, DAVID CLARKE, JASON ALICEA, California Institute of Technology, PAUL FENDLEY, University of Oxford — There exists various ways of understanding the topological properties of Ising anyons—from simple free-fermion toy models to formal topological quantum field theory. For other types of anyons simple toy models rarely exist; their properties have to be obtained using formal self-consistency relations. We explore a family of gapped 1D local bosonic models that in a certain limit become trivial to solve and provide an intuitive picture for Fibonacci anyons. One can interpret this model as a quasi-1D wire that forms the building block of a 2D topological phase with Fibonacci anyons. With this interpretation all topological properties of the Fibonacci anyons become manifest including ground state degeneracy and braid relations. We conjecture that the structure of the model is protected by an emergent symmetry analogous to fermion parity.

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David Aasen
California Institute of Technology

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