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Permutation Symmetric Critical Phases in Disordered Non-Abelian Anyonic Chains LUKASZ FIDKOWSKI, GIL REFAEL, HAN-HSUAN LIN, Caltech, PARAJ TITUM, Indian Institute of Technology, Kanpur, India — Topological phases supporting non-abelian anyonic excitations have been proposed as candidates for topological quantum computation. We study disordered non-abelian anyonic chains based on the quantum groups $SU(2)_k$, a hierarchy that includes the $\nu = 5/2$ FQH state and the proposed $\nu = 12/5$ Fibonacci state, among others. We find that for odd k these anyonic chains realize infinite randomness critical *phases* in the same universality class as the S_k permutation symmetric multicritical points of Damle and Huse (arXiv:cond-mat/0207244). Indeed, we show that the pertinent subspace of these anyonic chains actually maps to the $Z_k \subset S_k$ symmetric sector of the Damle-Huse model, and this Z_k symmetry stabilizes the phase.

Lukasz Fidkowski
Caltech

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