

Abstract Submitted  
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**Topological Insulating Phases of Non-Abelian Anyonic Chains**

WADE DEGOTTARDI, Argonne Natl Lab — I will present work on the topological insulating phases of non-abelian anyonic chains, focusing on antiferromagnetically coupled spin-1/2  $su(2)_k$  chains at any level  $k$ . The topological phases of these systems are characterized by anyonic end modes. A detailed discussion of the two most prominent cases is given: Majorana fermions (at  $k = 2$ ) and Fibonacci anyons ( $k = 3$ ). A renormalization group approach which allows for a straightforward determination of the topological phases of these systems will be discussed. This work reveals a deep connection between topological order and spontaneous symmetry breaking in these systems. It will be argued that the emergent anyons may be more easily manipulated than the physical quasiparticles and could be used to perform quantum computation.

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