

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Anyonic Symmetries and Non-Abelian Topological Defects of Bosonic Abelian Fractional Quantum (Spin) Hall States in the *ADE* Classification¹ MAYUKH KHAN, JEFFREY TEO, TAYLOR HUGHES, University of Illinois, Urbana-Champaign — We consider bosonic abelian Fractional Quantum Hall (FQH) and Fractional Quantum Spin Hall (FQSH) states with edge theories drawn from the *ADE* Kac Moody algebras at level 1. This set of systems have ‘anyonic’ symmetries that leave braiding and fusion invariant Remarkably, the group of anyonic symmetries for this class of models is isomorphic to the symmetries of the Dynkin diagrams of the particular *ADE* Lie Algebra under consideration. The triality symmetry of the Dynkin diagram of $so(8)$ leads to the largest anyonic symmetry group S_3 (the permutation group on 3 elements). Each element of the anyonic symmetry group corresponds to a distinct way of gapping out the edge (i.e., each element corresponds to a Lagrangian subgroup). Junctions between two distinct gapped edges host non abelian twist defects with quantum dimensions (> 1). In the case of $so(8)$ we have more exotic twist defects with non-abelian fusion.

¹We acknowledge support from the U.S. Department of Energy, Division of Materials Sciences under Award No. DE-FG02-07ER46453 (MK, TLH) and the Simons Foundation (JT).

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Date submitted: 15 Nov 2013

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