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Colleen Delaney* (crdelane@iu.edu). *Fusion rules for permutation defects in multilayer topological order.*

Although permutation orbifolding in conformal field theory is well established, a thorough understanding of its algebraic counterpart under the bulk-boundary correspondence of (2+1)D TQFTs and (1+1)D CFTs - namely permutation gauging of modular tensor categories - remains under development. It was only recently by the work of Corey Jones and Terry Gannon that the existence of these permutation gaugings was confirmed mathematically (see Corey Jones' talk also in the Special Session on Mathematical Aspects of CFT).

Motivated by the physics of anyons and symmetry defects in symmetry-enriched topological phases of matter, we show how to derive the fusion rings for permutation extensions of modular tensor categories from elementary considerations. This gives a foundation for a concrete construction of permutation gaugings at the combinatorial level and beyond. (Received September 16, 2019)