

Abstract Submitted
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Modular Transformations of Fermionic Fractional Quantum Hall Phases¹ ALAN TRAN, University of California, Santa Barbara, PARSA BONDERSOHN, Station Q, Microsoft Research, MENG CHENG, Yale University — The universal properties (fusion and braiding) of quasiparticles in bosonic topologically ordered phases can be described by unitary modular tensor categories (UMTCs). The modular transformations of such systems on surfaces, such as a torus, are directly related to the mutual and self statistics of the quasiparticles. Fermionic topologically ordered phases similarly have associated UMTCs, which describe the universal properties of not just their quasiparticles, but also their fermionic vortices. We explain the relation of the fermionic modular (spin-modular) transformations to the corresponding UMTC data. We validate this prescription for a variety of fractional quantum Hall states by explicitly computing the fermionic modular transformations on the FQH wavefunctions.

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