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**Ryan Timothy Johnson\*** (johnsor@grace.edu), Grace College, 200 Seminary Drive, Winona Lake, IN 46590. *An invariant that distinguishes Tambara-Yamagami categories.*

In this talk, we investigate the higher Frobenius-Schur indicator introduced by Ng and Schauenburg and prove that it is a strong enough invariant to distinguish between any two Tambara-Yamagami fusion categories. Our method of proof is based on computation of the Frobenius-Schur indicators as Gauss sums for certain quadratic forms on finite abelian groups and relies on the classification of quadratic forms on finite abelian groups due to Wall.

As a corollary to our work, we show that the state-sum invariants of 3-manifolds associated with Tambara-Yamagami categories determine the category as long as we restrict to Tambara-Yamagami categories coming from groups  $G$  whose order is not a power of 2. Turaev and Vainerman proved this result under the assumption that  $G$  has odd order and they conjectured that a similar result should hold for Tambara-Yamagami categories coming from even-order groups. Their proof used the state-sum invariant of lens spaces  $L_{k,1}$ . We provide an example showing that the state-sum invariants of lens spaces is not enough to distinguish all Tambara-Yamagami categories. (Received September 16, 2014)