

Classifying Frobenius Algebras in Dijkgraaf-Witten Categories

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Algebra objects are a useful structures found throughout category theory that can be used in a range of classification problems, such as classifying the representation theory of tensor categories and classifying 2-dimensional topological field theories. The pointed tensor categories associated to a finite group G and a 3-cocycle on G . Algebra objects in these categories have been classified by Ostrik, Natale. However, pointed tensor categories can only contain commutative algebras when the group G is abelian. We can move to the commutative picture for a general group by constructing the Dijkgraaf-Witten (DW) categories, using the monoidal center construction. These DW categories are equivalent to the category of twisted Yetter-Drinfeld modules over the group algebra $\mathbb{K}G$. During this talk, I will present a classification of Frobenius algebras in these categories, lifting the results of Ostrik, Natale to the monoidal center and generalising existing results by Davydov-Simmons to a field of arbitrary characteristic. This is done by means of a Frobenius Monoidal Functor, and utilising certain properties of the group algebra. Joint work with Ana Ros Camacho (Cardiff University) and Robert Laugwitz (University of Nottingham)