Hopf25

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On Extended Frobenius Structures

A classical result in quantum topology is that oriented 2-dimensional topological quantum field theories (2-TQFTs) are fully classified by commutative Frobenius algebras. In 2006, Turaev and Turner introduced additional structure on Frobenius algebras, forming what are called extended Frobenius algebras, to classify 2-TQFTs in the unoriented case. This work provides a systematic study of extended Frobenius algebras in various settings: over a field, in a monoidal category, and in the framework of monoidal functors. Numerous examples, classification results, and general constructions of extended Frobenius algebras are established.