StreetFest

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Conformal field theory and Frobenius algebras in modular tensor categories

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A class of Frobenius algebras in modular tensor categories provides the right tools for proving the existence of two-dimensional rational conformal quantum field theories. For an algebra A in this class, the construction used in the proof provides in particular a dictionary between algebraic structures and physical concepts, part of which looks as follows:

category of left A-modules	=	boundary conditions
category of A-bimodules	=	defect lines
bimodule morphisms between certain induced bimodules	=	bulk fields
Picard group of the bimodule category	=	internal symmetries

Morita-equivalent algebras yield the same conformal field theory; the Brauer group of the modular tensor category describes the subset of modular invariant partition functions that arise from an automorphism of the fusion rules.