Andre Henriques.

Invertible conformal nets.

Theorem: Conformal nets form the objects of a symmetric monoidal 3-category CN3.

Definition: A conformal net is a factorization algebra on the category of 1-dimensional balls with values in von Neumann algebras.

Note: There is a non-rigorous conjectural correspondence between unitary full CFTs and conformal nets.

Note: Can extend the map to all 1-dimensional manifolds.

Theorem: A conformal net A is invertible (fully dualizable) in CN3 iff $\mu(A) = 1$ ($\mu(A) < \infty$ respectively).

Here $\mu(A) \in \{0\} \cup [1, \infty]$.

Fact (part of a definition of a conformal net): The two actions of the image M of the upper part of a circle on $L^2(M)$ can be used to define an action of $A(I)$ on $L^2(M)$ for every $I \subset S^1$.

Definition: $\mu(A)$ is the quantum dimension of the correspondence defined by $L^2(M)$ with two actions of two pairs of quarters of circle.

Define $A^\circ(I) = A(I)^\circ = A(\bar{I})$. This is the inverse or the dual if they exist.

Definition: A 1-morphism (a defect) in CN3 is a functor from the category of 1-dimensional compact bicolored manifolds with boundary to von Neumann algebras with correspondences as morphisms. (It is enough to consider three intervals: two one-colored intervals and one interval with two colors.)