Verlinde, Erik

Fusion rules and modular transformations in 2D conformal field theory. (English)

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Summary: We study conformal field theories with a finite number of primary fields with respect to some chiral algebra. It is shown that the fusion rules are completely determined by the behavior of the characters under the modular group. We illustrate with some examples that conversely the modular properties of the characters can be derived from the fusion rules. We propose how these results can be used to find restrictions on the values of the central charge and conformal dimensions.

MSC:

81T40 Two-dimensional field theories, conformal field theories, etc. in quantum mechanics

81R10 Infinite-dimensional groups and algebras motivated by physics, including Virasoro, Kac-Moody, W-algebras and other current algebras and their representations

Full Text: DOI

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