

THE CLASSIFICATION OF RIEMANN SURFACES AND CONDITIONS ON THE QUANTUM THEORY *

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Abstract

From the classification of Riemann surfaces, the categories relevant for quasiconformal rigidity, non-renormalization theorems, vanishing flux conditions and the value of the nonperturbative four-dimensional string coupling are described. It is verified that the domain of string perturbation theory should be identified with the class O_G . The restriction to these surfaces is sufficient to induce a reduction of the exceptional group invariance required by the intersection form of a nonsmooth four-manifold that is an embedding space of an infinite-genus surface to the gauge groups of the standard model. The occurrence of condensation of string ground states follows from the structure of the Hilbert spaces on a countable set of ends of noncompact surfaces.

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1 Domain of String Perturbation Theory and Quasiconformal Transformations

The class of surfaces in the universal moduli space of string theory would be required to satisfy the following conditions: (i) computability of the

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