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Conformal Field Theory on Universal Family of Stable Curves with Gauge Symmetries

Akihiro Tsuchiya*), Kenji Ueno†) and Yasuhiko Yamada

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Introduction

Conformal field theory has not only useful application to string theory and two-dimensional critical phenomena but also has beautiful and rich mathematical structure, and it has interested many mathematicians. Conformal field theory is characterized by infinite-dimensional symmetry such as Virasoro algebra. Especially, its correlation functions are characterized by differential equations arising from representations of infinite-dimensional Lie algebras. ([BPZ], [KZ], [EO], [MMS].) Physically, correlation functions should have the properties such as locality, holomorphic factorization and monodromy invariance (duality). To build conformal field theory having such properties, usual approach is to construct holomorphic (chiral) conformal blocks which are the *half*

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