CFT from the arc point of view and structural relations to planar algebras

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Abstract

One approach to study moduli spaces is to use arcs. Taking this approach, we defined the arc operad, which among other things models correlation functions on over a certain partial compactification of moduli space. Using a careful analysis, we then were able to restrict the theory to moduli space and to extend it to the open/closed case.

An example of these correlation functions are actions on the Hochschild cochain complex of a (Frobenius) algebra. These operations include Deligne’s conjecture, its cyclic version and string topology. These actions are built from two main ingredients, a discretization and the co-simplicial structure.

On this discretized level of actions there is a striking analogy of our theory with that of planar algebras, whose deeper connection we will elucidate and explore.