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Open and Closed Topological Strings In Two Dimensions

Several decades ago, three parallel theories of two-dimensional quantum gravity were developed, involving random matrices; Liouville theory coupled to matter; and topological field theory. The first two approaches have fairly straightforward extensions to the case of quantum gravity on a two-manifold with boundary, but the third does not. However, an extension of the third approach was discovered relatively recently by Pandharipande, Solomon, and Tessler, with later work by Buryak and Tessler. In this talk (based on work with R. Dijkgraaf), I will explain their construction in a more physical language.