

## Topological Recursion in Gromov-Witten Theory

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### Abstract

Recently physicists Bouchard, Klemm, Marino, and Pasquetti conjectured a powerful recursion formula for calculating both open and closed Gromov-Witten invariants of toric Calabi-Yau spaces, based on the matrix model theory of Eynard and Orantin. In this talk I will explain the Eynard-Orantin theory using a simple example of counting problem in enumerative geometry. The main theorem is that the Laplace transform of the number of Grothendieck's dessins d'enfants gives the Poincare polynomial of the moduli space of smooth algebraic curves of an arbitrary genus and an arbitrary number of marked points. This polynomial can be calculated by using the recursion formula of Eynard and Orantin.

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