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Twisted r-spin potential and Givental's quantization

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Abstract

The universal curve $\pi\colon \overline{\mathcal{C}} \to \overline{\mathcal{M}}$ over the moduli space $\overline{\mathcal{M}}$ of stable r-spin maps to a target Kähler manifold X carries a universal spin bundle $\mathcal{L} \to \overline{\mathcal{C}}$. Therefore, the moduli space $\overline{\mathcal{M}}$ itself carries a natural K-theory class $R\pi_*\mathcal{L}$.

We introduce a *twisted* r-spin Gromov–Witten potential of X enriched with Chern characters of $R\pi_*\mathcal{L}$. We show that the twisted potential can be reconstructed from the ordinary r-spin Gromov–Witten potential of X via an operator that assumes a particularly simple form in Givental's quantization formalism.

1 Introduction

In [23] Mumford used the Grothendieck–Riemann–Roch formula to express the Chern characters of the Hodge bundle over the moduli space of stable curves via other tautological classes.

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