

Quantum D -module and Equivariant Floer Theory for Free Loop Spaces

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Abstract

The objective of the talk is to clarify the relationships between quantum D -module and equivariant Floer theory. Equivariant Floer theory was introduced by Givental in his paper “Homological Geometry”. He conjectured that quantum D -module of symplectic manifolds is isomorphic to the equivariant Floer cohomology for the universal cover of free loop space. First, motivated by the work of Guest, we formulate the abstract notion of quantum D -module which generalizes the D -module defined by the small quantum cohomology algebra. By using this framework, we show that quantum D -module completely determines the small quantum products. Second, we define the equivariant Floer cohomology of toric complete intersections explicitly, using Givental’s model. This is shown to satisfy the axioms of abstract quantum D -module. Then we prove that quantum D -module and equivariant Floer cohomology are isomorphic for semi-positive toric complete intersections.