



GEOMETRY SEMINAR

Noncommutative Mather-Yau theorem and its applications to Calabi-Yau algebras and homological minimal model program

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Abstract

In this talk, we will show that the equivalence class of a superpotential up to formal change of variables, is determined by its superpotential algebra (Jacobi algebra) together with a class in its 0-th Hochschild homology assuming it is finite dimensional. This result can be viewed as a noncommutative analogue of the famous theorem of Mather and Yau on isolated hypersurface singularities.

As applications of this result, we will present two rigidity theorems. The first one is on complete Ginzburg dg-algebras, which are always 3-Calabi-Yau. The second one is on the relative singularity categories and the classical singularity categories of 3-dimensional flopping contractions. It provides an evidence for the Donovan-Wemyss conjecture, which asserts that the contraction algebra (a large class of finite dimensional superpotential algebras) is a complete invariant for the underlying singularities of 3-dimensional flopping contractions.

This is a recent joint work with Zheng Hua. The preprint of this work has been posted at [arXiv:1803.06128](https://arxiv.org/abs/1803.06128).

Date: March 27, 2018 (Tuesday)

Time: 4:00 – 5:00pm

Venue: Room 210, Run Run Shaw Bldg., HKU