

Deformations of Calabi-Yau categories and Poisson brackets of functions

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We explicate two deformation problems for a smooth Calabi-Yau category C , showing in particular that the complexes underlying the Lie algebras controlling these deformation problems are shifts of negative cyclic and of cyclic chains of C . Using these results, we show that the natural map from cyclic chains of C to functions on the 'moduli of objects' M_C is a map of (shifted) Lie algebras with respect to the deformation-theoretic Lie structure on cyclic chains and the Poisson bracket on functions induced by the Calabi-Yau structure on C . Our results give a chain level generalisations of classical constructions of Goldman for moduli of local systems and of Hitchin for $GL(n)$ -Higgs bundles. This is joint work with Nick Rozenblyum.

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