Announcement

Seminar on Deformation Quantization

16. 6. 2023 at 2pm CEST

Seminarroom SE 30

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Differential graded Lie algebras and stability problems in geometry

Given a Poisson structure π on a manifold M, and a symplectic leaf L, the leaf L is stable if every Poisson structure close enough to π also has a leaf diffeomorphic to L. A sufficient condition for general compact leaves being stable was given by M. Crainic and R. Fernandes. We show that for zero-dimensional leaves, the question of stability is an instance of the following question about differential graded Lie algebras: Given a differential graded Lie algebra $\mathfrak{g}$, a differential graded Lie subalgebra $\mathfrak{h}$, and a Maurer-Cartan element $Q \in \mathfrak{h}$, when is every Maurer-Cartan element of $\mathfrak{g}$ near Q equivalent to an element in $\mathfrak{h}$? In the case that $\mathfrak{h}$ has degreewise finite codimension in $\mathfrak{g}$, we give a sufficient condition for a positive answer to the latter question. We then give some applications of this result to stability of zero-dimensional leaves of other geometric structures.

Invited by Stefan Waldmann