Deformationsquantisierung

spricht am 9. 1. 2014 um 10 Uhr c.t.,

im Seminarraum 00.009 (Physik Ost)

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über das Thema:

An unabelian version of T.Voronov’s construction of $L_\infty$ structures.

In 2005 T.Voronov gave a rather useful explicit construction of an $L_\infty$ structure on a graded vector space $V$ which is supposed to be an abelian subalgebra complementing a subalgebra $H$ in a graded Lie algebra $G$ which he extended to the ambient Lie algebra $G$. His technique gave rise to some $L_\infty$ constructions attached to coisotropic submanifolds and the simultaneous deformation of associative or Lie algebras and their morphisms (work of Y.Fréguier et al.). We generalize his construction to an $L_\infty$ structure on the quotient $G/H$ (and the extension) without assuming that there is an abelian subalgebra complement to $H$ in $G$. The construction simplifies a bit to some ‘graded dressing transformation’ if there is a (non)abelian subalgebra complement. The main idea is the observation that the quotient $U(G)/(U(G)H)$ of the universal envelopping algebra $U(G)$ of $G$ is a cofree coalgebra on which $G$ acts from the left by coderivations. This quotient had recently been studied in the trivially graded case by Calaque, Caldararu and Tu: using their result we can show that the generalized Voronov $L_\infty$ structure is isomorphic just to a differential (no higher brackets) iff the (graded) Atiyah (or Nguyen-van Hai) class of the Lie algebra pair $(G,H)$ vanishes. We shall indicate how the generalization may help to the quantization problem of coisotropic submanifolds as modules.

gez. Stefan Waldmann