

q -Deformations, twisted algebraic structures and new-type cohomologies

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A quantum deformation or q -deformation consists of replacing usual derivation by a σ -derivation or (σ, τ) -derivation in algebras of vector fields. The main example is given by Jackson derivative and lead for example to q -deformation of \mathfrak{sl}_2 , Witt algebra, Virasoro algebra and also Heisenberg algebras (oscillator algebras). The description of the new structures gave rise to a structure generalizing Lie algebras, called Hom-Lie algebras or quasi-Lie algebras studied first by Larsson and Silvestrov. Since then various classical algebraic structures and properties were extended to the Hom-type setting. The main feature is that the classical identities are twisted by homomorphisms.

The purpose of my talk is to give an overview of recent developments and provide some key constructions and examples on Hom-algebras, BiHom-algebras and their dualization. I will show that they lead to new-type cohomologies. Moreover, I will describe (σ, τ) -differential graded algebra which generalizes the notion of differential graded algebra, and show an example involving Generalized Clifford algebra.

References

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