

Graded quasi Lie algebras and hom-Lie algebras structures

Sergei SILVESTROV (Mälardalen University, Sweden)

sergei.silvestrov@mdh.se

In this talk, an overview will be presented about hom-algebra structures, with focus on foundations and recent advances on graded (color) quasi Lie algebras, quasi-hom Lie algebras, hom-Lie algebras and related hom-algebra structures. These interesting algebraic structures appear for example when discretizing the differential calculus as well as in constructions of differential calculus on non-commutative spaces. Quasi Lie algebras encompass in a natural way the Lie algebras, Lie super-algebras, color Lie algebras, hom-Lie algebras, q-Lie algebras and various algebras of discrete and twisted vector fields arising for example in connection to algebras of twisted discretized derivations, Ore extension algebras, q-deformed vertex operators structures and q-differential calculus, multi-parameter deformations of associative and non-associative algebras, one-parameter and multi-parameter deformations of infinite-dimensional Lie algebras of Witt and Virasoro type, multi-parameter families of quadratic and almost quadratic algebras that include for special choices of parameters algebras appearing in non-commutative algebraic geometry, universal enveloping algebras of Lie algebras, Lie superalgebras and color Lie algebras and their deformations. Common unifying feature for all these algebras is appearance of some twisted generalizations of Jacoby identities providing new structures of interest for investigation from the side of associative algebras, non-associative algebras, generalizations of Hopf algebras, non-commutative differential calculi beyond usual differential calculus and generalized quasi-Lie algebra central extensions and Hom-algebra formal deformations and co-homology. Hom-algebra generalizations of Nambu algebras, associative algebras and Lie algebras to n-ary structures are also actively studied and some constructions and results on n-ary hom-Lie algebras will be presented in this talk.

References

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