

Infinity algebras, also known as strongly homotopy algebras, were introduced by Stasheff in the context of associahedra, as an algebraic object connected to topology. He also realized that the cohomology of both Lie and Associative algebras could be given in terms of an intrinsic bracket on a space of coderivations of an appropriate coalgebra. It has been established that versal deformations for both the L_∞ and A_∞ algebras exist and can be constructively obtained, under mild assumptions on the cohomology. Cyclic cohomology is related to the deformations of the algebra structure preserving an invariant inner product, and cyclic algebras give rise to homology cycles on appropriate graph complexes. The celebrated solution to the existence problem for deformation quantization of Poisson manifolds by Kontsevich uses an L_∞ isomorphism as a key tool. We explore various infinity algebras and cyclic versions.