

Gastón Andrés García

Universidad Nacional de La Plata, Argentina

ggarcia@mate.unlp.edu.ar

Let k be an algebraically closed field of characteristic 0 and let D_m be the dihedral group of order $2m$ with $m = 4t$; $t \geq 3$. This talk will be based on joint work with Fernando Fantino and Mitja Mastnak [FG], [GM] and [FGM] where we classify all finite-dimensional pointed and copointed Hopf algebras whose group of group-likes is D_m by means of the lifting method and 2-cocycle deformations. As a byproduct we obtain new examples of finite-dimensional pointed and copointed Hopf algebras.

Among many useful tools for constructing new Hopf algebras is the use of multiplicative 2-cocycles for deforming the multiplication of a given Hopf algebra (and the dual notion of deforming its coproduct by using a twist). With this in mind, it is interesting to ask whether some non-isomorphic Hopf algebras might be cocycle deformations of each other. It has been proven by different methods that all known families of finite-dimensional pointed and copointed Hopf algebras over abelian and non-abelian groups can be constructed by deforming the multiplication of bosonizations of Nichols algebras.

It turns out that it is also the case for all pointed and copointed Hopf algebras over D_m . We show this result by giving explicitly the family of 2-cocycles that give the deformation. Besides introducing these families of Hopf algebras, I will describe how to produce such cocycles and give the appropriate setting where the construction applies.

References

[FG] F. Fantino and G. A. García, On pointed Hopf algebras over dihedral groups. *Pacific J. of Math.* Vol. 252 (2011), no. 1, 69–91.

[FGM] F. Fantino, G. A. García and M. Mastnak, On copointed Hopf algebras over dihedral groups. In preparation.

[GM] G. A. García and M. Mastnak, Deformation by cocycles of pointed Hopf algebras over non-abelian groups, *Math. Res. Lett.* 22 (2015), 59–92.

Joint work with Fernando Fantino (Universidad Nacional de Córdoba, Argentina) and Mitja Mastnak (St. John's University, Canada).