

## On non-graded pointed Hopf algebras

It was shown by Cibils and Rosso that a path coalgebra admits Hopf algebra structures if and only if the corresponding quiver is a Hopf quiver, and if it's the case, all the coradically graded Hopf algebra structures over it were classified. Furthermore, any coradically graded pointed Hopf algebra can be embedded into such a Hopf algebra "largely".

Important examples (for example, the quantum enveloping algebras of Lie algebras) tell us that not all pointed Hopf algebras are coradically graded, there thus arises the naive question: is it possible to give a complete list of all pointed Hopf algebras? This question is far away from being solved. In this talk, we deal with the simplest case, and determine all the Hopf structures over the path coalgebra of any basic cycle. The idea is simple, we just use the so-called "regrading" method, that's after introducing a new grading on the path coalgebra, we make the Hopf structures close enough to graded ones, and now we can get our result by direct calculation.