Hopf25

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Convex orderings and quantum tangent spaces

When building up a theory of differential noncommutative geometry, one of the most delicate steps is the construction of a suitable differential calculus that describes the differential structure of a given noncommutative space. In a recent work Ó Buachalla and Somberg showed a covariant differential calculus of classical dimension for the quantum full flag manifolds of type A. They made use of the celebrated theory of Lusztig bases for the quantized enveloping algebras to build up a so-called quantum tangent space. In order to extend this result to other series, and hopefully prove the uniqueness of such differential calculi, one has to find a unifying framework to describe the coproduct of Lusztig root vectors. In this talk, I will show a way to do so in terms of convex orderings on positive roots, pointing at the combinatorial properties of a reduced decomposition of the longest element of the Weyl group that gives rise to a quantum tangent space.