Hopf25

Réamonn Ó Buachalla
Charles University, Czech Republic
Plenary talk, Forum E
Thursday, April 24, 2025
10h-10h25

Nichols Algebras versus Bimodule Connections

One of the well-known motivations for Nichols algebras comes from the noncommutative geometry of quantum groups, and in particular the Woronowicz construction of Nichols algebras from bicovariant differential calculi. In recent years, a quantum principal bundle variation on the Woronowicz construction was discovered, and applied to the quantum Grassmannians' Heckenberger-Kolb calculi. Moreover, it was also conjectured that this construction extends to the B,C, and D series irreducible quantum flag manifolds. In this talk we show that this conjecture is false, explaining why, for the B2 and C3 cases, no equivariant Nichols algebra description exists. However, we produce an alternative description of these quantum exterior algebras in terms of the bimodule map of Levi-Civita connections of the Heckenberger-Kolb calculi. Time permitting, possible extensions of this work to the Lusztig calculi of the full quantum flag manifolds will be discussed.