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Global Dimension of Connected Hopf Algebras. Preliminary report.

Wang, Zhang, and Zhuang have studied Gelfand-Kirillov (GK) dimension of connected Hopf algebras (2015) and classified such Hopf algebras of GK dimension 4 over an algebraically closed field of characteristic zero. We study global dimension on connected Hopf algebras whether a similar classification can be obtained. We find that there is a positive answer with some restriction in particular when the space of primitive elements is a finite dimensional completely solvable Lie algebra over a field of characteristic zero. (Received August 25, 2016)