Hopf25

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Semisimple Hopf algebras constructed as biproducts and their properties

In joint work with Yorck Sommerhäuser, we constructed two families of eight-dimensional semisimple Yetter-Drinfeld Hopf algebras over the Klein four-group. Both families are cocommutative, but one is commutative, and the other is noncommutative. Each family consists of four Yetter-Drinfeld Hopf algebras, corresponding to a fourth root of unity. Via the Radford biproduct construction, these Yetter-Drinfeld Hopf algebras give rise to semisimple Hopf algebras of dimension 32 which can alternatively be constructed as Hopf algebra extensions. We determine all possible ways in which this can be done. In particular, we show that these Hopf algebras cannot be constructed as cocentral abelian extensions. We will also discuss the self-duality of these Hopf algebras and describe their representations.