On the category of cocommutative Hopf algebras

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In [1] we prove that the category of cocommutative Hopf algebras over any field is semi-abelian [2]. The aim of this talk is to give an idea of the proof of this result and to explain some of its consequences.

In particular, we deduce the classical theorem by Takeuchi saying that the category of commutative and cocommutative Hopf algebras is abelian. We can then show that the categories of Hopf crossed modules in the sense of Majid [3] and the one of internal crossed modules in the sense of Janelidze [4] coincide in $\mathsf{Hopf}_{\mathsf{K,coc}}$ (see also [5] for related results in a general context). Finally, the possibility of introducing and studying the notion of crossed squares of cocommutative Hopf algebras will also be discussed.

References

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