Hopf algebra extensions of group algebras and Tambara-Yamagami categories

Abstract:
An important problem related to the classification of semisimple Hopf algebras was the question of deciding the existence of examples which were not group-theoretical. Recently, this question has been answered by Nikshych, who constructed a family of semisimple Hopf algebras which are not group-theoretical as an extension of the algebra of functions on the group $\mathbb{Z}_2$ by a twisted group algebra $(kG)^J$. In this talk we shall consider Hopf algebra extensions of a triangular semisimple Hopf algebra A by the group $\mathbb{Z}_2$, which are in a sense dual to those mentioned before. We describe the (co-)representation theory of such Hopf algebras, which generalizes at the Hopf algebra level, the so-called Tambara-Yamagami categories. We relate the construction to the notion of G-equivariantization of fusion categories. Finally, we show how the structure of such Hopf algebra is determined by certain group-theoretical data.

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