

OPLAX HOPF ALGEBRAS

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Hopf categories were introduced by Batista, Caenepeel and Vercruyse in 2016, as a many-object generalization of Hopf algebras linked to other notions like multiplier Hopf algebras and with applications to categorical Galois theory. What is of particular interest is that the multiplication and comultiplication appear to make use of different monoidal products: Gabriella Böhm in subsequent work expressed Hopf categories as specific opmonoidal monads. In our work, we follow a different direction of generalizing Hopf monoids in a braided monoidal bicategory, that allows us to realize Hopf categories as Hopf-type objects over the same monoidal product, restoring in a sense the self-dual feature of classical Hopf algebras. In this talk, we introduce oplax bimonoids and oplax Hopf monoids in an arbitrary braided monoidal bicategory, we study their main properties and we exemplify such structures in a Span-type bicategory where they return semi-Hopf and Hopf categories.

This is a report on joint work with Mitchell Buckley, Timmy Fieremans and Joost Vercruyse.