

# Twisted Hopf algebras

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A twisted Hopf algebra is a Hopf algebra in the category of linear species. The Fock functors allow to recover "classical" Hopf algebras from twisted ones. Numerous constructions and results can be lifted to the level of twisted bialgebras, such that cofreeness, shuffle and quasi-shuffles products, etc.

Using two tensor products in the category of species, we define the notion of cointeraction of twisted bialgebras. Examples on finite topologies and graphs allow to reconstruct Ehrhart polynomials of chromatic polynomials in a canonical way from cointeraction of twisted bialgebras.