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*Hopf monoids in Species and associated Hopf algebras*

The recent literature has seen the emergence and profusion of certain Hopf algebras of a combinatorial nature. We propose a general framework for the construction and study of these Hopf algebras. We study the tensor category of species and relate it to the tensor category of graded vector spaces by means of bilax tensor functors. Constructions of graded Hopf algebras from Hopf monoids in species are derived. We use the geometry and combinatorics of the Coxeter complex of type A to construct Hopf monoids. The corresponding Hopf algebras include those of symmetric functions, quasisymmetric functions, noncommutative symmetric functions, other Hopf algebras of prominence in the recent literature, and new ones. The categorical approach yields uniform deformations and higher-dimensional generalizations of all these objects.