

1086-05-1379

Federico Ardila* (federico@sfsu.edu) and **Marcelo Aguiar** (maguiar@math.tamu.edu). *The Hopf Monoid of Generalized Permutahedra.*

Aguiar and Mahajan's "Hopf monoids in species" constitute a good framework for the study of Hopf-algebraic structures associated to combinatorial objects. After illustrating this definition with some examples, I will introduce the Hopf monoid of generalized permutahedra (polytopes which arise in many contexts in mathematics). Our main result is an explicit antipode formula for this Hopf monoid. By specializing this formula to various submonoids, we obtain new and old results about the Hopf algebras of graphs, matroids, posets, etc. and their enumerative properties. (Received September 21, 2012)