Quasisymmetric functions from combinatorial Hopf monoids and Ehrhart Theory

Jacob White*[1]

[1]University of Texas Rio Grande Valley [Brownsville, TX] (UTRGV) – Brownsville, TX, USA, United States

Abstract

We investigate quasisymmetric functions coming from combinatorial Hopf monoids. We show that these
invariants arise naturally in Ehrhart theory, and that some of their specializations are Hilbert functions for relative
simplicial complexes. This class of complexes, called forbidden composition complexes, also forms a Hopf monoid,
thus demonstrating a link between Hopf algebras, Ehrhart theory, and commutative algebra. We also study various
specializations of quasisymmetric functions.

*Speaker