

Séminaire d'algèbre, topologie et géométrie

Jeudi 2 octobre à 14h

Salle I

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Quasi-symmetric functions, poset partitions and finite topologies

A combinatorial Hopf algebra based on double posets, endowed with a bilinear form based on pictures between double posets (in analogy to pictures of tableaux as defined by Zelevinski) was introduced in 2011 by Malvenuto and Reutenauer.

When the second order of a double poset is total, one obtains the notion of special double poset; it is equivalent to that of labelled poset of Stanley. Its generating function, with respect to Stanley's classical definition of P -partitions associated to a special poset P is quasi-symmetric, and, in fact, it is a homomorphism between the Hopf algebra of double posets and that of quasi-symmetric functions.

Generalizing to preorders, we define the notion of T -partitions associated to a finite topology T , and deduce a Hopf algebra morphism from a new Hopf algebra on topologies to the Hopf algebra of packed words. This is joint work with L. Foissy and F. Patras.