

**CHROMATIC AND EHRHART POLYNOMIAL,  
COMBINATORIAL HOPF ALGEBRAS**

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Abstract:

One can interpret chromatic polynomial of graphs of Ehrhart polynomials of convex polytopes in terms of algebraic structures of type Hopf: these polynomials appear as Hopf algebra morphisms, and are characterized by a unicity result for a compatibility with two cointeracting coproducts. These results are used to give an algebraic proof of the classical results by Rota and Stanley.