

Combinatorics and geometry of Littlewood-Richardson numbers

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Littlewood-Richardson coefficients are fundamental numbers in algebraic combinatorics. They appear in the theory of symmetric functions, in the representation theory of the symmetric and general linear groups, in Schubert calculus, and in other areas. We start this talk by making a brief survey of the Littlewood-Richardson rule and some of its proofs. Then we review three major combinatorial interpretations of Littlewood-Richardson coefficients, namely LR tableaux, hives, and Berenstein-Zelevinsky triangles. We view the three of them as integer points in certain cones, and present simple linear bijections between them, which produce explicit bijections for all triples of partitions involved in the Littlewood-Richardson rule. This is joint work with Igor Pak.