Combinatorics Seminar

Organizer: Alexander Woo, Kevin Woods, and Alexander Yong

Monday, 2:10-3pm, 939 Evans

Nov. 1   **Alexander Postnikov**, M.I.T.

Permutohedra, associahedra, and beyond

The volume of the permutohedron is given by a multivariate polynomial that has many interesting combinatorial properties. We give 3 different formulas the this polynomial and discuss its relation with the Catalan numbers, the Eulerian numbers, parking functions, binary trees, mixed volumes of hypersimplices, Hall's marriage theorem, and Weyl's character formula. We also study a more general class of polytopes that includes permutohedra, Stasheff's associahedra and cyclohedra, Stanley-Pitman polytopes, graphical zonotopes, and various generalized associahedra that came up in DeConcini-Procesi wonderful arrangements. We describe combinatorial structure of these polytopes and give formulas for their volumes and Erhart polynomials. This talk will be an extended version of the talk given at Stanley's conference, see slides at http://www-math.mit.edu/ apost/talks.html