Avery St. Dizier (Cornell)

Schubert Polynomials and Flow Polytopes

Abstract for the Combinatorics Seminar 2019 April 23

The flow polytope associated to an acyclic graph is the set of all nonnegative flows on the edges of the graph with a fixed net flow at each vertex. I will discuss a family of subdivisions of certain flow polytopes and a polynomial invariant of these different subdivisions. I will give background on Schubert and Grothendieck polynomials, and then demonstrate how this polynomial invariant has a close connection to certain Schubert and Grothendieck polynomials. A consequence is that many interesting properties of the invariant carry over to Schubert polynomials in general, and Grothendieck polynomials conjecturally. I will finish with some questions about Schubert polynomials inspired by this research that remain mostly open.