OLIVER PECHENIK, University of Waterloo

A web basis of invariant polynomials from noncrossing partitions

The irreducible representations of the symmetric group are called Specht modules S^λ and are indexed by partitions. We can realize S^λ as a certain graded piece of a ring of invariants, equivalently as global sections of a line bundle on a partial flag variety. There are many general ways to choose useful bases of this module. Particularly powerful are web bases, which make connections with cluster algebras and quantum link invariants, except that web bases are only available in very special cases; essentially, we only know web bases in the cases $\lambda = (m, m)$ and $\lambda = (m, m, m)$. Building on work of B. Rhoades, we find what appears to be a web basis of invariants for a special family of Specht modules with lambda of the form $(a, a, 1^b)$. The planar diagrams that appear are noncrossing set partitions, and we thereby obtain geometric interpretations of earlier enumerative results in tableau dynamics. (Joint work with Becky Patrias and Jessica Striker.)