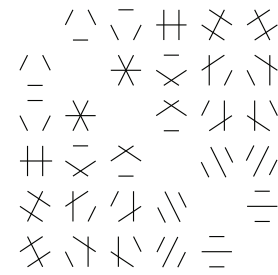# Mathematics Seminar

Rocky Mountain Algebraic Combinatorics Seminar

Balanced weights on trees and boundary classes of stable curves

Maria Gillespie
CSU

We present a simple combinatorial formula, in terms of weighted trees, for an arbitrary intersection product of boundary classes on the moduli space $M_{0,n}$-bar of stable genus 0 curves with n marked points. These calculations are in principle known, but we work out the details and make it explicit. This talk will also serve as an overview of the connections between the geometry of this moduli space and combinatorics. This is based on joint work with Jake Levinson.

Higher Specht Polynomials and Tableaux Bijections for Hessenberg Varieties

Kyle Salois
CSU

The cohomology rings of regular semisimple Hessenberg varieties are only completely understood in some cases. One such case is when the Hessenberg function is $h = (h(1), n, \ldots, n)$, and is described by Abe, Horiguchi, and Masuda in 2017. We define an alternative basis for the cohomology ring in this case, which is a higher Specht basis. We give combinatorial bijections between the monomials in this basis and sets of P-tableaux, motivated by the work of Gasharov in 2008 and Shareshian and Wachs in 2016. This bijection illustrates the connection between the symmetric group action on these cohomology rings and the Schur expansion of chromatic symmetric functions. We further use the inversion formula for P-tableaux to calculate the Poincaré polynomial for these Hessenberg varieties.

Weber 223
4–6 pm, Friday, November 17, 2023
(Refreshments 3:30–4 pm)
Colorado State University
4 pm, Friday, November 17, 2023

This is a joint Denver U / UC Boulder / U of Wyoming / CSU seminar that meets biweekly.
Anyone interested is welcome to join us at a local restaurant for dinner after the talks.

Colorado State University

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