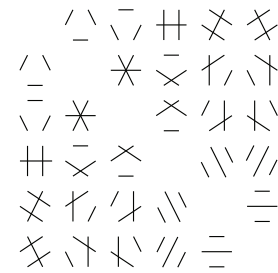


Mathematics Seminar



Rocky Mountain Algebraic Combinatorics Seminar

Eigenvalues of Graphs

Nathan Lindzey
Technion

In the previous talks of this series we met the Kneser graph and the character theory of finite groups. In this talk we will revisit these topics, this time through the lens of spectral graph theory. In particular, we will discuss what eigenvalues can tell you about a graph and introduce some other families of Kneser-like graphs with remarkable algebraic properties.

Jack Derangements

Nathan Lindzey
Technion

For each integer partition $\lambda \vdash n$ we give a simple combinatorial formula for the sum of the Jack character θ_α^λ over the integer partitions of n with no singleton parts. For $\alpha = 1, 2$ this gives closed forms for the eigenvalues of the permutation and perfect matching derangement graphs, resolving an open question in algebraic graph theory. Our proofs center around a Jack analogue of a hook product related to Cayley's Ω -process in classical invariant theory, which we call *the principal lower hook product*.

Weber 223
4–6 pm, Friday, October 3, 2022
(Refreshments 3:30–4 pm)
Colorado State University
4 pm, Friday, October 3, 2022

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.



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