



The rising STAR of Texas

Discrete Mathematics Seminar

Time: Friday, October 9, 2020, 2:15-3:15 PM
Title: Tableau Stabilization and Lattice Paths
Speaker: Jacob David, Phillips Exeter Academy
Zoom Link: <https://txstate.zoom.us/j/95566530916?pwd=OGI4NINJN1U0UUIROU9ML1MxUjdmZz09>
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Abstract:

A standard Young tableau is obtained when the cells of a Young diagram are filled with integers so that the entries are increasing along each row and column. They have various applications in combinatorics and representation theory. Rectification is a transformation on a skew-shape standard tableau that, by moving the entries around, results in a straight-shape standard tableau. If one attaches copies of a skew tableau to the right of itself by concatenating corresponding rows, after some point the entries only experience horizontal displacement after rectification, a phenomenon called tableau stabilization. While tableau stabilization was originally developed to construct the sufficiently large rectangular tableaux fixed by given powers of promotion, the purpose of this presentation is to improve the original upper bound on the stabilization function to the number of rows of the skew tableau. In order to prove this bound, we encode increasing subsequences as lattice paths and show that various operations on these lattice paths weakly increase the maximum combined length of the increasing subsequences. Within the context of Greene's Theorem, the arrangement of these lattice paths can be used to prove the desired result.