STEPHAN PFANNERER, University of Waterloo

Skew Schur functions and a mystery cyclic action

Skew Schur functions encode skew characters of the symmetric group through their power-sum expansions. For rectangular shapes, Brendon Rhoades famously showed that, after a suitable sign adjustment, these character values count fixed points of powers of promotion on standard Young tableaux, giving an instance of the cyclic sieving phenomenon. Consequently, the sign-adjusted character associated with a rectangular shape, restricted to the cyclic subgroup generated by a long cycle, is the character of a permutation action.

We thus ask: when does the restriction of a skew character to this cyclic subgroup arise from a permutation action? We show that this happens precisely when all values of the restricted character are nonnegative.

Our result applies to arbitrary skew shapes, but while Rhoades provides the group action through promotion for rectangular shapes, finding a natural cyclic action on standard skew tableaux remains an open question.

Based on joint work with Per Alexandersson, Martin Rubey, and Joakim Uhlin.