Contribution ID: **45** Type: **Invited talk**

Chromatic quasisymmetric functions and linked rook placements

Saturday, 1 October 2022 14:15 (50 minutes)

R. Stanley introduced the chromatic symmetric functions of a graph G. This definition was later refined by J. Shareshian and M. Wachs, where a parameter q is introduced in the definition of chromatic uasisymmetric functions. In this talk, we discuss two separate results and their connection: (1) a Hall-Littlewood expansion of the chromatic quasisymmetric functions (2) e-positivity of the chromatic quasisymmetric functions when a partition λ indexing the elementary symmetric function is a hook shape. To explain both results we introduce "linked" rook placements, where each column and row of a board contain at most one rook and some of rooks are linked. we also discuss other e-positivity results and relationship with LLT polynomials. (1) is based on joint work with Meesue Yoo and (2) is with Jeong Hyun Sung.

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Session Classification: Session 4