

1167-05-284

Tom Braden, June Huh, Jacob P. Matherne* (matherne@uoregon.edu), **Nicholas Proudfoot** and **Botong Wang**. *Singular Hodge theory for combinatorial geometries*.

Kazhdan–Lusztig (KL) polynomials for Coxeter groups were introduced in the 1970s, providing deep relationships among representation theory, geometry, and combinatorics. In 2016, Elias, Proudfoot, and Wakefield defined analogous polynomials in the setting of matroids. In this talk, I will compare and contrast KL theory for Coxeter groups with KL theory for matroids.

I will also associate to any matroid a certain ring whose Hodge theory can be used to establish the positivity of the KL polynomials of matroids as well as the "top-heavy conjecture" of Dowling and Wilson from 1974 (a statement on the shape of the poset which plays an analogous role to the Bruhat poset). Examples involving the geometry of hyperplane arrangements will be given throughout. The talk will require minimal background, and everyone is invited. This is joint work with Tom Braden, June Huh, Nick Proudfoot, and Botong Wang. (Received March 09, 2021)