

DALHOUSIE MATHEMATICS COLLOQUIUM

Monday June 18, 3:30 pm, Chase 319

Speaker: Alex Fink
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Characteristic polynomials of hyperplane arrangements and Hilbert functions

Take a system of linear equations in several variables. The set of points which satisfy at least one of the equations is known as a *hyperplane arrangement*. Many significant discrete and topological properties of the complement of the arrangement can be derived from a single associated polynomial invariant, known as the *characteristic polynomial*. A 1970 conjecture of Rota-Heron-Welsh, constraining the polynomials that can arise as characteristic polynomials, was recently proved by Huh and others using algebro-geometric techniques. After introducing the players, I will show how several of these properties of the characteristic polynomial can be seen as manifestations of the same commutative algebra. This is joint work with David Speyer and Alexander Woo.