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The Coloring Complex

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In 1998 Francisco Brenti asked whether or not every chromatic polynomial was a Hilbert polynomial. Steingrimsson's positive solution to this led to the coloring complex. Geometric properties of this complex have led to the discovery of new restrictions on chromatic polynomials. We will take a tour which describes the coloring complex and what these new restrictions are. During our tour we will visit Macaulay's characterization of Hilbert polynomials, face rings, hyperplane arrangements and zonotopes.

This is joint work with Patricia Hersh of Indiana University.

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