1035-13-1563   **Bradford G Hovinen*** (`hovinen@math.utoronto.ca`), Department of Mathematics, University of Toronto, 40 St. George St., Room 6290, Toronto, ON M5S 2E4, Canada. *Matrix factorizations of the classical discriminant.*

The classical discriminant detects whether a univariate polynomial over a field has repeated roots. Classical results of Cayley, Legendre, Sylvester, and Bzout show that there exist nontrivial determinantal formulae for the classical discriminant, allowing for more efficient evaluation. However, the classical formulae are all equivalent in the sense that the cokernels of the matrices are all isomorphic. This begs the question of whether there are any nontrivial inequivalent determinantal formulae.

This talk will cover recent work in classifying determinantal formulae. In particular, for the degree-4 discriminant, a moduli space of equivalence classes of formulae the cokernels of whose matrices are graded will be described. The structure of the moduli space closely relates to the geometry of the hypersurface cut out by the discriminant, and this connexion will be discussed. The talk will also touch on the construction of a specific formula — that of the so-called *open swallowtail* — that is inequivalent to those hitherto known. (Received September 20, 2007)