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Dan Bates* (bates@math.colostate.edu), **Chris Peterson**, **Andrew Sommese** and **Charles Wampler**. *A numerical-symbolic algorithm for computing the geometric genus of a curve.*

The common zero locus of a set of multivariate polynomials (with complex coefficients) determines an algebraic set. Any algebraic set can be decomposed into a union of irreducible components. Given a one dimensional irreducible component, i.e. a curve, it is useful to understand its invariants. The most important invariants of a curve are the degree, the arithmetic genus and the geometric genus. In this talk, I will describe a numerical algorithm to compute the geometric genus of any one-dimensional irreducible component of an algebraic set. This method uses heavily the algorithms of numerical algebraic geometry, so I will also provide a brief introduction to the necessary background in numerical algebraic geometry. (Received August 26, 2011)