Solving over-determined Systems by Subresultant Methods

Agnes Szanto

Institute of Mathematics and Statistics, University of Kent, Canterbury CT2 7NF, UK
A.Szanto@ukc.ac.uk

A general *subresultant method* is introduced to compute elements of a given ideal with few terms and bounded coefficients. Earlier constructions for subresultant matrices using Macaulay matrices are extended to Jouanolou's resultant matrices and to Bezout/Dixon matrices, involving matrices of significantly smaller size than the Macaulay type matrices. Applications of the subresultant method include the solution of over-determined polynomial systems with approximate coefficients. Furthermore, we obtain determinantal formulae with improved degree bounds for the polynomials arising in the computation of the geometric representation of algebraic sets.