Computing the Multiple Roots of Polynomial Systems via Symbolic-numeric Elimination Method

Xiaoli Wu[a] and Lihong Zhi[a]

[a]Key Laboratory of Mathematics Mechanization, AMSS, Beijing 100190, China

We present a method based on symbolic-numeric reduction to geometric involutive form to compute the multiplicity structure of isolated multiple zeros. The singular solution of a system of multivariate polynomial equations can be exact or approximate. If the multiple root is known with limited accuracy, then we refine it to high accuracy by solving the matrix eigenproblem formed from the invoultive form of the truncated polynomial system.