

MATHEMATICS DEPARTMENT
North Carolina State University

ALGEBRA SEMINAR

Wednesday, March 23, 2005

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How Many Real Solutions?

ABSTRACT: It is well known that the number of complex solutions for a system of multivariate polynomial equations is bounded by the product of the degrees (Bezout bound) or the mixed volume, etc. But then, how many of them are real?

Suppose that the coefficients of the polynomials depend on some parameters. What parameter values would ensure that there is at least 1 real solution? (2 real solutions, ..., dimension 1, 2, ...)? Suppose that we also allow “>” (inequalities) as well as “=” (equations). What parameters values would ensure that there is a real solution?, etc.

These kind of questions arise very frequently in various areas of mathematics, science and engineering. Due to recent progresses, all these questions can be answered systematically. Solving problems such as these often require efficient ways to solve several more basic problems such as gcd, resultant, factorizations, etc.

In Fall 2005, MA 522 “Computer Algebra” will provide an introductory overview on various fundamental ideas/methods for tackling those basic problems and then show how those ideas/methods can be used to tackle the “real solving” problem mentioned above.

2:00 - 2:30 pm HA 370

Faculty and Students are invited to attend.