USNA Math Department Colloquium

Recent progress in computing Gröbner bases

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Date: Wednesday, 16 October 2013

Time: 12:00-1:00pm

Location: Chauvenet 110

Abstract: Polynomial systems are ubiquitous in Mathematics, Science, and Engineering, and Gröbner basis theory is one of the most powerful tools for solving polynomial systems in practice. Buchberger introduced in 1965 the first algorithm for computing Gröbner bases and it has been implemented in most computer algebra systems (e.g. Maple, Mathematica, Magma, etc.). Faugere presented two algorithms: F4 (1999) and F5 (2002), with the latter being the fastest algorithm known in the last decade. In this talk, I shall present an overview on recent progress on efficient algorithms for computing Gröbner bases, including a recent algorithm which is a joint work with Frank Volny IV (National Security Agency) and Mingsheng Wang (Chinese Academy of Science).