Recent progress on Gröbner bases computations

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Gröbner bases theory and algorithms provide versatile tools for polynomial system solving. Modern algorithms are based on advanced reductions to linear algebra, relying on constructions from commutative algebra.

In this talk, we present new methods for ideal theoretic operations such as saturation and change of ordering in order to make effective algebraic operations such as set difference and projection in algebraic geometry. These methods are based on pushing further the aforementioned linear algebra reductions and the use of module theory.

Joint work with J. Berthomieu (Sorbonne Univ.), C. Eder (TU Kaiserslautern) and V. Neiger (Sorbonne Univ.).