Some recipes for handling large expressions in polynomial system solving

Marc Moreno Maza
Ontario Research Center for Computer Algebra
University of Western Ontario
London, Canada

Abstract

Modular methods are well known techniques for controlling the swell of intermediate expressions in symbolic computations. Sometimes, the output of a computation is so large that additional techniques are needed. This is often the case with the solution set of polynomial systems, for space complexity reasons.

In this talk, we discuss various representations for such solution set that tend to be more compact than others. For instance, triangular decompositions into non-normalized regular chains. Then, we discuss various strategies for solving large systems. In particular, for computing "all of the zeros" of systems with infinitely many solutions.