STRUCTURE IN POLYNOMIAL SYSTEMS

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There are various computations we may wish to do with polynomial systems, such as the computation of Groebner bases, Triangular Decompositions (Regular Chains) or Cylindrical Algebraic Decompositions. In all cases, there are a variety of choices to be made. Some of these, such as variable order or monomial order, can drastically affect the output, others, of the form "what to do next" can affect the running time even if not the output. There are various heuristics proposed in the literature for these. In this talk, we look at the field, and ask whether we have paid enough attention to structural properties of the input equations, and in particular the co-occurrence of variables.