Sparse Triangular Decomposition Based on Chordal Graphs

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Abstract. For an arbitrary multivariate polynomial set, its sparsity with respect to the variables can be described by its associated graph [1]. Based on the theoretical results that top-down triangular decomposition for solving polynomial systems is proved to preserve the chordal structures of input polynomial sets [3, 6], sparse triangular decomposition is proposed to make use of the variable sparsity [4]. In this talk, I will first briefly present the underlying ideas of sparse triangular decomposition based on chordal graphs. Then I will show how to exploit the variable sparsity of biological dynamic systems in computing their equilibria by using sparse triangular decomposition [2, 5].

References

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