

MINIMIZING POLYNOMIALS ON SEMIALGEBRAIC SETS

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ABSTRACT. Recently, there has been interest in developing algorithms for optimizing polynomials on semialgebraic sets using representation theorems for positive polynomials. When combined with numerical methods from semidefinite programming, such theorems give a powerful tool for solving certain types of optimization problems. In this talk we discuss the history of these methods and give an overview of the subject. Finally, we discuss some very recent results with J. Demmel and J. Nie on minimizing a polynomial on a semialgebraic set via a sum of squares relaxation over its gradient ideal.