

*Department of Mathematics,
University of California, San Diego*

Math 278 - CCOM Seminar

Prof. Jiawang Nie

UCSD

Regularization Methods for Sum of Squares Relaxations in Large Scale Polynomial Optimization

Abstract:

We study how to solve sum of squares (SOS) and Lasserre's relaxations for large scale polynomial optimization. When interior-point type methods are used, typically only small or moderately large problems could be solved. This paper proposes the regularization type methods which would solve significantly larger problems. We first describe these methods for general conic semidefinite optimization, and then apply them to solve large scale polynomial optimization. Their efficiency is demonstrated by extensive numerical computations. In particular, a general dense quartic polynomial optimization with 100 variables would be solved on a regular computer, which is almost impossible by applying prior existing SOS solvers.

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