

# Sparsity in Sum of Squares and Semidefinite Programming Relaxation of Polynomial Optimization Problems

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## **Abstract**

The sum of squares (SOS) and semidefinite programming (SDP) relaxation proposed by Lasserre and Parrilo is known to be a very powerful method for computing global optimal solutions of polynomial optimization problems (POPs). Theoretically, it computes global optimal solutions (or approximate global optimal solutions with any high accuracy) of a given POP satisfying moderate assumptions. However, the size of SDP relaxation problems grows exponentially as the size of POPs to be solved increases, so that its application was limited to small scale POPs in practice. In this talk, we discuss how we exploit sparsity in POPs to attack large scale problems.