

Riener, Cordian; Theobald, Thorsten; Andr en, Lina Jansson; Lasserre, Jean B.
Exploiting symmetries in SDP-relaxations for polynomial optimization. (English)

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Summary: In this paper we study various approaches for exploiting symmetries in polynomial optimization problems within the framework of semidefinite programming relaxations. Our special focus is on constrained problems especially when the symmetric group is acting on the variables. In particular, we investigate the concept of block decomposition within the framework of constrained polynomial optimization problems, show how the degree principle for the symmetric group can be computationally exploited, and also propose some methods to efficiently compute the geometric quotient.

MSC:

[90C22](#) Semidefinite programming
[90C26](#) Nonconvex programming, global optimization
[14P05](#) Real algebraic sets
[05E10](#) Combinatorial aspects of representation theory

Cited in **18** Documents

Keywords:

polynomial optimization; semidefinite programming; semidefinite relaxation symmetry; symmetric group; constrained optimization

Software:

SeDuMi

Full Text: [DOI](#) [arXiv](#)