Nie, Jiawang

The hierarchy of local minimums in polynomial optimization. (English) Zbl 1323.65071

The author studies how to compute the hierarchy of critical values and local minimums of a polynomial, by using semidefinite relaxations. For this purpose, $H$-minimizers (points satisfying the first- and second-order necessary optimality conditions) are computed. To compute each $H$-minimum, a sequence of semidefinite relaxations, based on optimality conditions is constructed. It is proved that each sequence has finite convergence to an $H$-minimum, under some generic conditions. A procedure for computing all $H$-minimums is presented. When there are equality constraints, similar results for computing the hierarchy of critical values and local minimums are obtained.

Reviewer: Nada Djuranović-Miličić (Belgrade)

MSC:

65K05 Numerical mathematical programming methods
90C22 Semidefinite programming
90C26 Nonconvex programming, global optimization

Keywords:
critical point; local minimum; optimality condition; polynomial optimization; semidefinite relaxation; sum of squares

Software:
RAGl; GloptiPoly; YALMIP; ScDuMi

Full Text: DOI arXiv

References:

\textbf{[59](3)}, 857-874 (2010) - Zbl 1261.15030


[18] Laurent, M; Putinar, M (ed.); Sullivant, S (ed.), Sums of squares, moment matrices and optimization over polynomials.,


This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original
paper as accurately as possible without claiming the completeness or perfect precision of the matching.