Symbolic computation in hyperbolic programming. (English) Zbl 1403.14093

Hyperbolic programming is a generalization of semidefinite programming. This studies the multiplicity structure of the algebraic boundary of the hyperbolicity cone of a hyperbolic polynomial. Based on this, exact algorithms for certifying multiplicity of the solution and the optimal value of hyperbolic programming are proposed.

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MSC:

14Q20 Effectivity, complexity and computational aspects of algebraic geometry
68W30 Symbolic computation and algebraic computation
90C22 Semidefinite programming
90C25 Convex programming

Keywords:

hyperbolic programming; hyperbolic polynomial; symbolic computation

Software:

RAGlib; Kronecker; SPECTRA; ISOLATE

Full Text: DOI arXiv

References:


[24] El Din, M. Safey; Schost, É., Polar varieties and computation of one point in each connected component of a smooth real algebraic set, ISSAC’03, 224-231, (2003), ACM - Zbl 1072.68693


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