

Optimization over measures and positive polynomials

Victor MAGRON, LAAS CNRS - Toulouse
Didier HENRION, LAAS CNRS - Toulouse
Milan KORDA, LAAS CNRS - Toulouse

Positive polynomials play a fundamental role in real algebraic geometry. Moments and measures are at the heart of analysis. Though usually well-separated, the last decades have been witnessing the development of new connections between these two fields, with new research tracks, and promising applications, in particular, in polynomial optimization. This mini-symposium focuses on recent advances related to positive polynomials, the theory of moments and their applications. Some of the aspects that will be discussed include :

- performance analysis of sum-of-squares and moment hierarchies ;
- use of structure and symmetry in algebraic optimization ;
- moment and polynomial optimization techniques for applications to various areas such as optimal transport, deep learning, discrete geometry and the general problem of moments.

The speakers who accepted to give a talk are :

- Tong Chen : Semialgebraic Optimization for Bounding Lipschitz Constants of ReLU Networks ;
- Rafaël Coyaud : Approximation of Optimal Transport problems with marginal moments constraints ;
- Ulysse Marteau-Ferrey : Sums of squares with Reproducing Kernel Hilbert Spaces : a path to global optimization of regular functions ;
- Philippe Moustrou : AM/GM-Based Optimization of Symmetric Polynomials ;
- Corbinian Schlosser : Sparse moment-sum-of-squares relaxations for nonlinear dynamical systems with guaranteed convergence.