Polynomial Optimization and Moments

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Abstract

Polynomial Optimization is a topic born from the intersection of Optimization with Representation Theorems for Positive Polynomials in Real Algebraic Geometry. In this talk I will briefly introduce the subject, giving a short description of the primal point of view (Sum of Squares relaxation) and the dual one (Moment relaxation).

I will mention the convergence results in the SoS approach and their Moment counterpart: the latter has less retrictive hypothesis than the former. I will introduce the concept of *exactness* for the Moment relaxation, which is desiderable for effectivness. Guided by some examples I will show how to make the relaxation exact: in the case of a finite number of points (Flat Truncation Property), and using the Gradient and Polar Ideals. This gives also an effective way to find the set of minimizers.