

# APPROXIMATION OF POSITIVE POLYNOMIALS FOR GLOBAL OPTIMIZATION

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Global optimization aims at finding the optimum of a non-linear function on a set defined by non-linear constraints. It is a difficult problem with many applications. At the turn of this century, Lasserre proposed to relax this problem into hierarchies of tractable finite dimensional convex optimization problems and their dual convex programs.

We will investigate this approach, based on Putinar's Positivstellensatz, from an approximation point of view. We will see how the representation of positive polynomials plays a crucial role and analyse the quality of approximation of the chosen representation and its impact on global optimization problems. The practical behavior of this method will be illustrated by few examples.