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ONE WORLD OPTIMIZATION SEMINAR

January 25th 2021 @ 15:30 CET (Central European Time)

MONIQUE LAURENT

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Sum-of-Squares Approximation Hierarchies for Polynomial Optimization

Abstract. Minimizing a polynomial function over a compact set is a computationally hard problem, already when restricting to quadratic polynomials and to simple sets like a ball, a hypercube, or a simplex. We discuss some hierarchies of bounds introduced by Lasserre, that are based on searching for an optimal sum-of-squares density function minimizing the expected value of f over K.

We will discuss several techniques that permit to analyse the performance guarantee of these bounds depending on the degree of the sum-of-square density. This includes using an eigenvalue reformulation of the bounds, links to extremal roots of orthogonal polynomials, and reducing to the univariate case by means of push-forward measures.

Based on joint works with Etienne de Klerk and Lucas Slot.

The link of the zoom-room of the meeting and the corresponding password will be announced the day before the talk on the mailing list of the seminar, to which one can subscribe on https://owos.univie.ac.at.