

Talk: An introduction to the Lasserre hierarchy in polynomial optimization

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Abstract: We survey a mathematical technology introduced in 2000 by Jean Bernard Lasserre to solve globally non-convex optimization problems on multivariate polynomials with the help of a hierarchy of convex semidefinite programming problems (linear matrix inequalities or LMI = linear programming problems in the cone of positive semidefinite matrices). Instrumental to the development of this technique is the duality between the cone of positive polynomials and the cone of moments. These basic objects are introduced and studied in detail, with a special focus on conic optimization duality, and some illustrative examples are described. Sketchy lecture notes are available at [arXiv:1309.3112](https://arxiv.org/abs/1309.3112).