An introduction to Christoffel-Darboux kernels for polynomial optimization

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1 Source and references

The thresholding scheme for Lebesgue measure restricted to sets with non empty interior was described in [2]. The construction of the kernel for singular measures is exposed in more details in [5]. The combination with Lasserre's hierarchy for polynomial optimal control [1] was introduced in [3] and the application to therapy modeling was proposed in [4].

References

[1] J.B. Lasserre, D. Henrion, C. Prieur, & E. Trélat (2008). Nonlinear optimal control via occupation measures and LMI-relaxations. SIAM journal on control and optimization, 47(4), 1643-1666.

[2] J.B. Lasserre, & E. Pauwels (2019). The empirical Christoffel function with applications in data analysis. Advances in Computational Mathematics, 45(3), 1439-1468.

[3] S. Marx, E. Pauwels, T. Weisser, D. Henrion, & J. Lasserre (2019). Tractable semi-algebraic approximation using Christoffel-Darboux kernel. arXiv preprint arXiv:1904.01833.

[4] K. Moussa, M. Fiacchini, & M. Alamir (2019). Robust Optimal Control-based Design of Combined Chemo-and Immunotherapy Delivery Profiles. IFAC-PapersOnLine, 52(26), 76-81.

[5] E. Pauwels, M. Putinar & J.B. Lasserre (2020). Data analysis from empirical moments and the Christoffel function. Foundations of Computational Mathematics, 1-31.