

An introduction to Christoffel-Darboux kernels for polynomial optimization

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Singular measures, approximate moments and SDP hierarchy for optimal control

During this last lecture, we will first mention the construction of CD kernels for singular measures. We will then present stability results and regularization techniques which allow to work with inexact moments or singular moment matrices. In the last part of the lecture, we will see how the CD kernel can be used in conjunction with Lasserre's Hierarchy for polynomial optimal control. We will describe an approach which allows to recover time trajectories based on the knowledge of moments of the underlying occupation measure. This will be illustrated on a toy example and we will mention a successful application in biological modeling.