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Positivity and representing measures in the truncated moment problem

Abstract

Let K denote a nonempty closed subset of $\mathbb{R}^n$ and let $\beta \equiv \beta^{(m)} = \{\beta_i\}_{i \in \mathbb{Z}_+^n, |i| \leq m}$, $\beta_0 > 0$, denote a real n-dimensional multisequence of finite degree m. *The Truncated K-Moment Problem (TKMP)* concerns the existence of a positive Borel measure μ, supported in K, such that

$$\beta_i = \int_{\mathbb{R}^n} x^i d\mu \qquad (i \in \mathbb{Z}_+^n, \ \ |i| \leq m).$$

We describe a number of interrelated techniques for establishing the existence of such *K-representing measures*. We discuss K-representing measures arising from *K-positivity* or *strict K-positivity* of the Riesz functional L_β associated with β; representing measures arising from extensions of moment matrices; Tchakaloff's Theorem and its generalizations and applications to TKMP; representing measures arising from a nonempty *core variety*.

Talk time: 07/22/2016 2:30PM— 7/22/2016 2:50PM
Talk location: Cupples I Room 113

Special Session: Finite and infinite dimensional moment problems. Organized by M. Infusino, S. Kuhlmann, and T. Kuna.