The tracial moment problem on quadratic varieties

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The truncated moment problem asks to characterize finite sequences of real numbers that are the moments of a positive Borel measure on $\mathbb{R}^n$. Its tracial analog is obtained by integrating traces of symmetric matrices. The solution of the bivariate quartic tracial moment problem with a nonsingular 7×7 moment matrix $\mathcal{M}_2$ whose columns are indexed by words of degree 2 was established by Burgdorf and Klep. In the talk we will present the solution of the singular bivariate tracial moment problem on quadratic varieties. In case the moment matrix $\mathcal{M}_n$ satisfies two quadratic column relations the existence of the measure can be completely characterized by certain numerical conditions, while in the presence of one quadratic column relation the existence of a representing measure is equivalent to the feasibility of certain linear matrix inequalities. The atoms in the representing measure are always pairs of 2×2 matrices. This is joint work with Abhishek Bhardwaj.

References:

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