1096-47-1429 **Raul E. Curto*** (raul-curto@uiowa.edu), Department of Mathematics, University of Iowa, Iowa City, IA 52242. *A new approach to the sextic truncated moment problem.*

For a degree $2n$ real bivariate moment sequence $\beta \equiv \beta^{(2n)} = \{\beta_{ij}\}_{i,j \in Z_+, i+j \leq 2n}$ to have a representing measure μ, it is necessary for the associated moment matrix $M(n)$ to be positive semidefinite, and for the algebraic variety associated to β, $\mathcal{V}_\beta \equiv \mathcal{V}(M(n))$, to satisfy rank $M(n) \leq$ card $\mathcal{V}_\beta$ as well as the following consistency condition: if a polynomial $p(x,y) \equiv \sum_{ij} a_{ij} x^i y^j$ of degree at most $2n$ vanishes on $\mathcal{V}_\beta$, then the *Riesz functional* $\Lambda(p) \equiv p(\beta) := \sum_{ij} a_{ij} \beta_{ij} = 0$.

Let $n = 3$, assume that $M(3) \geq 0$, and that it satisfies the variety condition rank $M(3) \leq$ card $\mathcal{V}_\beta$ as well as consistency. Also assume that $M(3)$ admits at least one *cubic* column relation. In joint work with Seonguk Yoo, we prove the existence of a related matrix $\widetilde{M(3)}$ with rank $\widetilde{M(3)} <$ rank $M(3)$ and such that each representing measure for $\widetilde{M(3)}$ gives rise to a representing measure for $M(3)$. As a concrete application, we discuss the case when rank $M(3) = 8$ and card $\mathcal{V}(M(3)) \leq 9$. (Received September 15, 2013)