1086-47-529   **Lawrence A. Fialkow*** (`fialkowl@newpaltz.edu`). *Limits of positive flat bivariate moment matrices.*

Let $\overline{\mathcal{F}_d}$ denote the closure of the positive flat moment matrices of degree $2d$ in n real variables. Each matrix in $\overline{\mathcal{F}_d}$ admits computable approximate representing measures, and in previous work Jiawang Nie and the author began to study concrete conditions for membership in this class. Let $\beta \equiv \beta^{(2d)} = \{\beta_i\}_{i \in \mathbb{Z}_+^n, |i| \leq 2d}$, $\beta_0 > 0$, denote an n-dimensional real sequence of degree $2d$. If the corresponding moment matrix $M_d \equiv M_d(\beta)$ is the limit of a sequence of positive *flat* moment matrices $\{M_d^{(k)}\}$, i.e., $M_d^{(k)} \succeq 0$ and $rank\ M_d^{(k)} = rank\ M_{d-1}^{(k)}$, then i) $M_d \succeq 0$, ii) $rank\ M_d \leq dim\ \mathbb{R}[x_1, \ldots, x_n]_{d-1}$, and iii) $\beta^{(2d-1)}$ admits a representing measure. We extend the results of Nie and the author by proving, conversely, that for $n = 2$, if M_d satisfies i), ii), and a Hankel matrix condition related to iii), then M_d is the limit of positive flat moment matrices. (Received September 05, 2012)