1007-47-249 **Roger A. Roybal*** (roger@math.ucsb.edu), Department of Mathematics, University of California, Santa Barbara, CA 93106. *A Reproducing Kernel Condition for Indeterminacy in the Multidimensional Moment Problem.*

A result of Berg, Chen, and Ismail shows that the determinacy of a positive measure μ on $\mathbb{R}$ which admits all moments is equivalent to $\lambda_N \to 0$ as $N \to \infty$, where λ_N is the smallest eigenvalue of the associated truncated Hankel matrix H_N. This does not hold for measures in $\mathbb{R}^d$, where $d > 1$, since there exist measures for which the corresponding eigenvalues tend to zero, yet these measures are indeterminate. In one dimension, reproducing kernels are intimately linked with determinacy, in that a measure is indeterminate if and only if a reproducing kernel exists on the space of polynomials. In multiple dimensions we show that the smallest eigenvalues of a set of associated Hankel forms are bounded away from zero if and only if such a reproducing kernel exists. In the case where the moments of μ satisfy a certain multiplicative condition, this implies that μ is indeterminate. (Received February 23, 2005)