1065-65-24 **Jiu Ding*** (jiudin@gmail.com), Department of Mathematics, 118 College Dr., Box 5045, Hattiesburg, MS 39406, and **Noah Rhee**, Department of Mathematics and Statistics, Kansas City, MO 64110. *A Maximum Entropy Method Based on Orthogonal Polynomials for Frobenius-Perron Operators.*

Let $S : [0, 1] \to [0, 1]$ be a chaotic map and let f^* be a stationary density of the Frobenius-Perron operator $P_S : L^1 \to L^1$ associated with S. We develop a numerical algorithm for approximating f^*, using the maximum entropy approach to an under-determined moment problem and the Chebyshev polynomials for the stability consideration. Numerical experiments show considerable improvements to both the original maximum entropy method and the discrete maximum entropy method. (Received July 26, 2010)