

Meeting: 1001, Evanston, Illinois, SS 22A, Special Session on Special Functions, Orthogonal Polynomials, and their Applications

1001-41-28 **Diego Dominici*** (dominicd@newpaltz.edu), Department of Mathematics, State University of New York at New Paltz, 75 S. Manheim Blvd. Suite 9, New Paltz, NY 12561-2443. *Asymptotic analysis of the Krawtchouk polynomials by the WKB method.*

We analyze the Krawtchouk polynomials $K_n(x, N, p, q)$ asymptotically. We use singular perturbation methods to analyze them for $N \rightarrow \infty$, with appropriate scalings of the two variables x and n . In particular, the WKB method and asymptotic matching are used. We obtain asymptotic approximations valid in the whole domain $[0, N] \times [0, N]$, involving some special functions. We give numerical examples showing the accuracy of our formulas. (Received July 04, 2004)