

**Meeting:** 1003, Atlanta, Georgia, SS 38A, AMS-SIAM Special Session on Orthogonal Polynomials—Random Matrices—Integrable Systems: Interdisciplinary Aspects, I

1003-33-757      **Mourad E. H. Ismail\*** (ismail@math.ucf.edu), Department of Mathematics, University of Central Florida, Orlando, FL 32816. *Complete Asymptotic Expansions for  $q$ -Polynomials*. Preliminary report.

We derive large degree complete asymptotic expansions of Plancherel-Rotach type for several families of  $q$ -orthogonal polynomials. The terms in these asymptotic developments involve the  $q$ -Airy function and its dilations. This  $q$ -Airy function was introduced and extensively studied by Ramanujan. (Received September 29, 2004)