1116-33-582 **Dan Dai***, Department of Mathematics, City University of Hong Kong, Hong Kong. *Uniform asymptotics of orthogonal polynomials arising from coherent states.*

In this paper, we study a family of orthogonal polynomials $\{\phi_n(z)\}$ arising from nonlinear coherent states in quantum optics. Based on the three-term recurrence relation only, we obtain a uniform asymptotic expansion of $\phi_n(z)$ as the polynomial degree n tends to infinity. Our asymptotic results suggest that the weight function associated with the polynomials has an unusual singularity, which has never appeared for orthogonal polynomials in the Askey scheme. Our main technique is the Wang and Wong's difference equation method. In addition, the limiting zero distribution of the polynomials $\phi_n(z)$ is provided.

This is a joint work with Weiying Hu and and Xiang-Sheng Wang (Received September 08, 2015)