Laguerre polynomials with varying non-classical parameters. The critical case

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During the past decade, several papers have dealt with asymptotics of Laguerre and Jacobi polynomials with varying non-classical parameters. In some of them, seminal theorems by Gonchar, Rakhmanov and Stahl on zero asymptotics of complex orthogonal polynomials have been applied, while in others, strong asymptotics have been obtained by applying the powerful tool of the Riemann-Hilbert analysis. In this talk, we consider the case of Laguerre polynomials $\{L_n^{(\alpha_n)}\}$, with $\lim_{n\to\infty} \frac{\alpha_n}{n} = -1$, and a different technique is applied in order to obtain the zero asymptotics. The connection with the so-called Szegö curve is shown.

This talk is related to a joint work with C. Díaz Mendoza (Univ. de La Laguna).