1040-65-105 **Ruyman Cruz-Barroso**, **Pablo Gonzlez-Vera*** (pglez@ull.es) and **Francisco Perdomo Pio** (fjppio@hotmail.com). *Szegő polynomials and quadrature rules associated with a weight function on the real line.*

In this talk, we shall be initially concerned with the approximate calculation of an integral of the form:

$$I_\omega(f) = \int_I f(x)\omega(x)dx$$

where f is a 2π-periodic function, $\omega(x)$ a weight function and I an interval of the real line i.e $I = [a, b]$, $(-\infty \leq a < b \leq +\infty)$. For this purpose, $I_\omega(f)$ will be estimated by means of an n-point quadrature rule like $I_n(f) = \sum_{j=1}^{n} A_j f(x_j)$ where the nodes and the weights are chosen so that $I_n(f)$ exactly integrates trigonometric polynomials up to a degree as large as possible. When I is a finite interval, then the Joukowsky Transform reduces the problem to an interval of length 2π,say $[-\pi, \pi]$, and the theory of orthogonal polynomials on the unit circle (Szegő polynomials) and the so-called Szegő quadratures immediately appear.

Now, what does it happen when I is an unbounded interval? Trying to give an appropiate answer to this question is the main aim of the work. This will be done through the theory of Szegő polynomials with respect to a new weight function associated with $\omega(x)$. Furthermore, different examples are analyzed and several numerical experiments carried on. (Received January 28, 2008)