Different ways to study properties of orthogonal polynomials on the unit circle

Cleonice F. Bracciali

UNESP - Universidade Estadual Paulista
`cleonice.bracciali@unesp.br`

We consider sequences of orthogonal polynomials, $\Phi_n(z)$, and para–orthogonal polynomials, $R_n(z)$, on the unit circle $\mathbb{T} = \{z = e^{i\theta} : 0 \leq \theta < 2\pi\}$. Using the map $t = cos(\theta/2)$ we show how the behaviour of the functions defined by $W_n(t) = (4z)^{-n/2} R_n(z)$ on the interval $(-1, 1)$ can help to study the properties of orthogonal polynomials on the unit circle. Also using the map $x = i(z+1)/(z-1)$ we show how the behaviour of the polynomials defined by $P_n(x) = 2^{-n}(x - i)^n R_n(z)$ on the real line, can help to study the properties of orthogonal polynomials on the unit circle.