

Binomial orthogonal polynomials

Mikhail Tyaglov¹

¹Shanghai Jiao Tong University, School of Mathematical Sciences, tyaglov@sjtu.edu.cn

Given a symmetric positive measure σ on an interval $[-a, a]$, $0 < a \leq +\infty$, one can construct two one-parametric families of orthogonal polynomials by real and pure imaginary one-dimensional perturbations of the tridiagonal matrix corresponding to the measure σ . In the present talk, we consider an example of such perturbations of a given finite discrete measure.

Namely, we construct an interesting example of a discrete finite positive strongly related to both Chebyshev and discrete Chebyshev polynomials. We find the corresponding moments, Hankel minors, and describe the measure. We also construct the pure imaginary one-dimensional perturbation of the tridiagonal matrix corresponding to the considered measure. This gives us an (explicit) example of a of non-positive moment functional \mathcal{L}_N on the real line. The limit cases connected with Bessel polynomials are also discussed.