

Moments of classical orthogonal polynomials and Genocchi numbers

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Abstract

Starting from the moment sequences of classical orthogonal polynomials we derive the orthogonality purely algebraically. We consider also the moments of $(q = 1)$ classical orthogonal polynomials, and study those cases in which the exponential generating function has a nice form and show that the generalized Dumont-Foata polynomials with six parameters are the moments of rescaled continuous dual Hahn polynomials. Refining the median Genocchi numbers Eu et al. have recently proved the gamma-positivity of the descent polynomials of even-odd descent permutations. As the descent polynomials of permutations, i.e., Eulerian polynomials, we present a natural (p, q) -analogue of their result.