

Asymptotic behaviours and general recurrence relations

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Abstract

The study of the polynomials defined by the General recurrence relations of the form $P_{-1}(z) \equiv 0$, $P_0(z) \equiv 1$ and

$$\forall k \geq 0 \quad P_{k+1}(z) = (z - a_k)P_k(z) - \sum_{i=\max(-1, k-q)}^{k-1} b_{i+1}^{[k]} P_i(z),$$

where a_k , $b_j^{[k]}$ are complex numbers and q the order of the recurrence, is an important thing for the applications - see already the wide literature on the subject when $q = 1$ (the Three-term recurrence relation case); some authors have also obtained some interesting results for $q > 1$.

The aim of this talk is the presentation of some asymptotic behaviours for the polynomials generated by some higher recurrence relations (e.g. $q > 1$). We have already given some results in [1,2,3].

References

- [1] Leopold. E, *Perturbed recurrence relations, II the general case*, Numer.Algor. **44** (2007), 347–366.
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- [3] Leopold. E, *Some asymptotic behaviours for perturbed general recurrence relations*, submitted.