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Linear combinations of polynomials with three-term recurrence. (English) Zbl 07487551

Summary: We study the zero distribution of the sum of the first $n$ polynomials satisfying a three-term recurrence whose coefficients are linear polynomials. We also extend this sum to a linear combination, whose coefficients are powers of $az + b$ for $a, b \in \mathbb{R}$, of Chebyshev polynomials. In particular, we find necessary and sufficient conditions on $a, b$ such that this linear combination is hyperbolic.

MSC:
30C15 Zeros of polynomials, rational functions, and other analytic functions of one complex variable (e.g., zeros of functions with bounded Dirichlet integral)
26C10 Real polynomials: location of zeros

Keywords:
zero distribution; recurrence; generating function

Full Text: DOI

References:

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