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INTERPOLATION AND THE LAGUERRE–PÓLYA CLASS

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Abstract. A long-standing open problem in the theory of distribution of zeros of real entire functions requires the characterization of all real sequences $T = \{\gamma_k\}_{k=0}^{\infty}$ such that for any real polynomial $p(x) := \sum_0^n a_k x^k$, the polynomial $\sum_0^n \gamma_k a_k x^k$ has no more nonreal zeros than $p(x)$ has. The main result of this paper shows that under a mild growth restriction, an entire function of exponential type $f(z)$ for which the sequence $T = \{f(k)\}_{k=0}^{\infty}$ satisfies the above condition must have only real zeros. The paper concludes with some applications to the Riemann Hypothesis.

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