

Laguerre-Pólya class of real entire functions, Fourier critical points and applications to special functions

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In this talk we are mainly interested on the distribution of the zeros of real entire functions. Our aim is to present the most important properties of real entire functions belonging to the so-called Laguerre-Pólya class. The significance of the Laguerre-Pólya class in the theory of entire functions stems from the fact that functions in this class, and only these, are the uniform limits, on compact subsets of \mathbb{C} , of polynomials with only real zeros. We will also present some important results related to the Fourier-Pólya theorem on the number of Fourier critical points of entire functions. Finally, applications of the results on functions belonging to the Laguerre-Pólya class and of the Fourier-Pólya theorem for some special functions (like Bessel functions) will be given.