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Rate of growth of distributionally chaotic functions. (English) Zbl 07475809

Summary: We investigate the permissible growth rates of functions that are distributionally chaotic with respect to differentiation operators. We improve on the known growth estimates for $D$-distributionally chaotic entire functions, where growth is in terms of average $L^p$-norms on spheres of radius $r > 0$ as $r \to \infty$, for $1 \leq p \leq \infty$. We compute growth estimates of $\partial/\partial x_k$-distributionally chaotic harmonic functions in terms of the average $L^2$-norm on spheres of radius $r > 0$ as $r \to \infty$. We also calculate sup-norm growth estimates of distributionally chaotic harmonic functions in the case of the partial differentiation operators $D^m$.

MSC:
30D15 Special classes of entire functions of one complex variable and growth estimates
47A16 Cyclic vectors, hypercyclic and chaotic operators
31B05 Harmonic, subharmonic, superharmonic functions in higher dimensions
47B38 Linear operators on function spaces (general)

Keywords:
distributional chaos; distributionally irregular vectors; growth rates; entire functions; harmonic functions; differentiation operator; partial differentiation operators

Full Text: DOI

References: