Density Criteria for Location of Zeros of Entire Functions and Dirichlet Series

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Resumo/Abstract:
We report some recent results about location of zeros of entire functions and Dirichlet series. All the conditions are given in terms of density of certain subspaces of functions in either $L^1(\mathbb{R})$ or $L^2(\mathbb{R})$. One of the results, which is a joint work with Yuan Xu from the University of Oregon, concerns an L^1 density criterion in order that an entire function of order at most one, which is represented as a Fourier transform, possesses only real zeros. The second type of results were obtained in a joint work with Willian D. Oliveira and may be considered generalizations of the celebrated criteria of Nyman-Beurling and Báez-Duarte for location of zeros of Dirichlet series. In particular, all these criteria provide necessary and sufficient conditions for the truth of the Riemann hypothesis.