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On the minima of α -Brjuno functions

Abstract: An irrational number is called a Brjuno number if the sum of the series $\log(q_{n+1})/q_n$ converges, where q_n is the denominator of the n -th principal convergent of the regular continued fraction. Brjuno numbers play an important role in the study of small divisors problems in dynamical systems. In 1988, J.-C. Yoccoz proved the optimality of the Brjuno condition for the linearization of quadratic polynomials, introducing a version of the Brjuno function well suited for estimate the size of Siegel disks. Motivated by the work of Balazard-Martin 2020, we study the scaling properties of the Brjuno function around its global and local minima. We give results both for the Brjuno function associated to the usual regular continued fraction expansion as well as for the generalized Brjuno function associated to α -continued fractions where $\alpha \in [1/2, 1)$. This is based on joint work with Carlo Carminati and Stefano Marmi.