

SURVIVOR SETS OF GAUSS MAP WITH A HOLE AT $1/2$

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Abstract:

Given $\alpha \in [0, 1/2]$, we investigate the set of numbers sharing identical representation of regular continued fractions and α -continued fractions. We prove that modulo a countable set such a set is a survivor set of the Gauss map with a hole at $1/2$, i.e., the set of points x such that all the iterations under Gauss map of x is less than α . Hence, these two sets have the same Hausdorff dimension. We further show that with respect to α , the function of such Hausdorff dimensions is increasing and locally constant almost everywhere. Moreover, we show that the function is not continuous at 0 , which is a new phenomenon in the study of open dynamical systems. This is a joint work with Cheng LIU.