

Normal numbers, multiple ergodic averages and multifractal analysis

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Abstract.

We demonstrate that the Hausdorff dimension of the set of normal numbers in base 2 whose binary expansions satisfy the condition that for any k , the k -th and $2k$ -th digits are not both equal to 1, is one-half. Furthermore, we establish a formula for the Hausdorff dimension of the set of normal numbers in base 2 with given limit of multiple ergodic averages of some special function. This is a joint work with Michal Rams.