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On a Gauss-Kuzmin type problem for piecewise fractional linear maps with explicit invariant measure. (English) Zbl 0971.60101

Int. J. Math. Math. Sci. 24, No. 11, 753-763 (2000).

Consider the map $T:[0,1]\to[0,1]$ defined as

$$T(x)=\begin{cases} x/\big(1-(N+1)x\big) & \text{if } 0\le x\le 1/(N+2),\\ (1-kx)/x & \text{if } 1/(k+1)<x\le 1/k,\ 1\le k\le N+1,\end{cases}$$

where N is a fixed positive integer. According to *F. Schweiger* [J. Aust. Math. Soc., Ser. A 34, 55-59 (1983; Zbl 0514.28012)], the map T has an invariant measure whose density can be expressed in closed form. The author derives a Gauss-Kuzmin-Lévy type theorem, that is, the asymptotic behaviour of $\mu((x:T^n x<y))$, $y\in[0,1]$, as $n\to\infty$, where μ is a nonatomic probability measure on the Borel subsets of $[0,1]$. The author's approach is via the theory of dependence with complete connections, see the reviewer and *S. Grigorescu* ["Dependence with complete connections and its applications" (1990; Zbl 0749.60067)], and is patterned after the work of *S. Kalpazidou* in similar contexts [Rev. Roum. Math. Pures Appl. 30, 527-537 (1985; Zbl 0576.60100), and Lith. Math. J. 27, No. 1, 32-40 (1987) and Litov. Mat. Sb. 27, No. 1, 68-79 (1987; Zbl 0644.10035)].

Reviewer: Marius Iosifescu (Bucureşti)

MSC:

60K99 Special processes
28D05 Measure-preserving transformations
11K55 Metric theory of other algorithms and expansions; measure and Hausdorff dimension

Cited in **1** Document

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