

Mixing properties of a class of expanding Lorenz maps on the interval

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Suppose that $f : [0, 1] \rightarrow [0, 2]$ is a continuous strictly increasing function which is differentiable on $(0, 1) \setminus F$ where F is a finite set, and assume that $\inf f' > 1$. Define $T_f x := f(x) - \lfloor f(x) \rfloor$, where $\lfloor y \rfloor$ is the largest integer smaller or equal to y . A map of this form is called an expanding Lorenz map. Conditions on f implying topological transitivity of T_f are investigated. Moreover, also topological mixing and some other variants of mixing properties will be considered.

Examples will show that the conditions on f are necessary to obtain these mixing properties. For the linear case $f(x) = \beta x + \alpha$ one obtains even better results. Here one obtains for example topological transitivity if $\beta \geq \sqrt[3]{2}$ and $0 \leq \alpha < \frac{1}{\beta^2 + \beta}$. It is also topologically mixing unless $f(x) = \sqrt[3]{2}x + \frac{2 - \sqrt[3]{4}}{2}$.