

1156-60-224

**Davit Karagulyan\*** (dkaragul@umd.edu), Department of Mathematics, University of Maryland, 1301 Mathematics Building, College Park, MD 20740, and **Dmitry Dolgopyat**. *Transient dynamical random walk with unbounded return times.*

We consider a one dimensional model of a dynamical random walk  $F$  defined on  $\mathbb{T} \times \mathbb{Z}$  and given as follows; for  $(x, n) \in \mathbb{T} \times \mathbb{Z}$  let

$$F(x, n) = \left( (ax + h_n(x)) \bmod 1, n - 1_{W_{n,-1}}(x) + 1_{\mathbb{T} \setminus W_{n,-1}}(x) \right),$$

where  $a \in \mathbb{N}$  and for all  $n \in \mathbb{Z}$ ,  $h_n \in C^2(\mathbb{T})$ ,  $W_{n,-1} = \cup_{i=1}^m I_i^n$ , where  $\{I_i^n\}_{i=1}^m$  is a collection of intervals. We also suppose that there is  $\delta > 0$  and a set  $W_{-1} \subset \mathbb{T}$ , so that for all  $n \in \mathbb{Z}$   $\|h_n\|_{C^1+Lip} \leq \delta$  and the Hausdorff distance between  $W_{n,-1}$  and  $W_{-1}$  is smaller than  $\delta$ . Under certain conditions on  $a$  and the set  $W_{-1}$ , we show that for  $\delta$  sufficiently small,  $F$  has a drift and  $z_n(x) = \pi_{\mathbb{Z}}(F^n(x, 0))$  satisfies the central limit theorem. (Received January 24, 2020)