

# PERSISTENCE OF AR(1)-SEQUENCES

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Let  $\xi_k$  be independent, identically distributed random variables and let  $a \in (0, 1)$  be a fixed constant. An AR(1)-sequence is defined by

$$X_n = aX_{n-1} + \xi_n, \quad n \geq 1, \quad (1)$$

where the starting point  $X_0$  of this process may be either deterministic or distributed according to any probabilistic measure  $\nu$ . We are interested in the tail behaviour of the stopping time

$$T_0 := \min\{k \geq 1 : X_k \leq 0\}.$$

We find minimal moment conditions on the innovations, under which one has

$$\mathbf{P}_x(T_0 > n) \sim V(x)e^{-\lambda n}, \quad n \rightarrow \infty,$$

where  $\lambda$  is a positive number.