

# UNIFORM NICE RECURRENCE

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As introduced by Bergelson, a set  $S \subset \mathbb{N}$  is called a set of *nice recurrence* if for every measure preserving system  $(X, \mu, T)$ , every  $\mu$ -measurable set  $A \subset X$  and every  $\epsilon > 0$  there exists some  $s \in S$  such that  $\mu(A \cap T^{-s}A) \geq \mu(A)^2 - \epsilon$ . Such an  $s$  is called an  $\epsilon$ -optimal return time for  $A$ . We show that for any set of nice recurrence  $S$ , one can bound the smallest  $\epsilon$ -return time by a quantity depending only  $S$ ,  $\mu(A)$  and  $\epsilon$ .

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*Key words and phrases.* countable amenable groups, large sets, recurrence, measure preserving systems, Poincaré sets, intersective sets.