

# Abstrakt IMPAN

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May 26, 2026

## **Deviations of ergodic averages for uniquely ergodic systems with positive entropy**

In the talk we will consider the ergodic averages for uniquely ergodic systems  $(X, T, \mu)$ . We know that for a uniquely ergodic system all continuous functions satisfy the ergodic theorem and the ergodic averages converge to a spatial constant uniformly. It remains the question how much can these ergodic averages deviate from this constant over time. In other words, we may investigate the growth rates of ergodic sums for uniquely ergodic systems. It is known that in full generality if  $f: X \rightarrow \mathbb{R}$  is continuous, then  $\sum_{i=0}^{N-1} f(T^i(x)) = O(N)$  for any  $x \in X$  and this bound cannot be improved. However, one may consider a more restrictive class of functions, e.g. Lipschitz functions.

We will show that there exist uniquely ergodic symbolic systems with positive entropy such that for every Lipschitz function  $g \in Lip(X)$  and  $x \in X$  we have  $\sum_{i=0}^{N-1} g(T^i(x)) = O(N^{1-\alpha})$  for  $\alpha \in (0, \frac{1}{9})$ . We will discuss the implications of this result in relation to a long standing conjecture by Katok.

This is joint work with Adam Kanigowski and Piotr Oprocha.