

ON ENTROPY OF Φ -IRREGULAR AND Φ -LEVEL SETS

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ABSTRACT. In the talk we present the results of joint work with J. Kupka (University of Ostrava), P. Oprocha (AGH UST) and X. Tian (Fundan University) summarizing our research on Φ -irregular and Φ -level sets in dynamical systems with the shadowing property.

A Φ -irregular subset of dynamical system (X, T) is a set of points for which the Birkhoff average:

$$\frac{1}{n} \sum_{i=0}^{n-1} \Phi(T^i x)$$

diverges, where $\Phi : X \rightarrow \mathbb{R}$ is a continuous function, $x \in X$, $n \in \mathbb{N}$. Although by the Birkhoff ergodic theorem those sets are of zero measure, their dynamical structure may be quite complicated and interesting.

In particular we concentrate on the theorem giving the estimation of the value of topological entropy of Φ -irregular set in dynamical system with the shadowing property containing a chain recurrent class.

We also show some results concerning the topological entropy of Φ -level sets (which are sets of points whose Birkhoff average lies in a specified interval).