

Zeta functions and periodic entropy of nonautonomous dynamical systems

JOÃO FERREIRA ALVES¹, MICHAL MÁLEK²

¹ *Centro de Análise Matemática, Geometria e Sistemas Dinâmicos Instituto Superior Técnico, TUL, Lisboa, Portugal .*

E-mail address: jalves@math.ist.utl.pt

² *Mathematical Institute, Silesian University in Opava, Na Rybníčku 1, 746 01 OPAVA, Czech Republic.*

E-mail address: Michal.Malek@math.slu.cz

Periodic sequences of continuous self mappings on a compact topological space, $F = (f_i)_{i \in \mathbb{N}}$, are commonly regarded as periodic nonautonomous difference equations or deterministic periodic nonautonomous dynamical systems (periodic dynamical systems for simplicity).

The study of the periodic entropy, $h_{\text{per}}(F)$, of a p -periodic dynamical system is the main topic of this talk.

Special attention will be paid to the formula

$$h_{\text{per}}(F) = \frac{h_{\text{per}}(f_{p-1} \circ \cdots \circ f_1 \circ f_0)}{p}, \quad (1)$$

which, in contrast with topological entropy, fails in general.

Our main goal is to provide sufficient conditions in order to get the equality in (1). Naturally the study of the analytic properties of the zeta function of F will play a central role in this discussion.