Continuity properties of topological entropy and pressure for monotonic mod one transformations

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Peter Raith (Univ. Wien)

Assume that $f : [0,1] \to \mathbb{R}$ is a continuous strictly increasing function. Define $T_f : [0,1] \to [0,1]$ by $T_f x := f(x) \pmod 1$, this means $T_f x := f(x) - [f(x)]$, where $[y]$ denotes the largest integer smaller or equal to y. Such a map is called a monotonic mod one transformation. Given $\varepsilon > 0$, two monotonic mod one transformations S_1 and S_2 are called ε-close, if there are continuous strictly increasing functions f and g such that $S_1 = T_f$, $S_2 = T_g$ and $\| f - g \|_\infty < \varepsilon$.

According to a general result obtained by Michał Misiurewicz and Wiesław Szlenk the topological entropy is lower semi-continuous. If $h_{\text{top}}(T_f) > 0$, then the entropy is continuous. One can associate a certain oriented graph to T_f. Using this graph one can prove results on the jumps up of the topological pressure. Moreover, also results on the stability of the measure of maximal entropy are obtained. In the case that no $c \in f^{-1}(\mathbb{Z})$ is periodic for T_f the topological pressure is upper semi-continuous for every weight function g.