The Gurevic entropy for Markov shifts

Fernanda Figueiredo*[1]

[1]Departamento de Matemática - UFSC – Brazil

Abstract

Let \$ {A} \$ be an alphabet, the full \${A}\$-shift is the collection of all bi-infinite sequences with symbols from \$ {A} \$. The full \$ {A} \$-shift is denoted by

$$\{A\}\{\{Z\}\} = (x\_i)\_\{i \in \{Z\}\} : x\_i \in \{A\},\ for\ all\ i \in \{Z\}$$

The shift map on the full shift is a map \$ $\sigma : \{A\}\{\{Z\}\} \to \{A\}\{\{Z\}\}\$thatassociatedapoint\$x \in \{A\}\$tothepointwhose\$i\{t$

We consider the Gurevic metric the metric on \$ {S} \$ such that the completion of \$ {S} \$ with respect to this metric is \$ {S}_{0} \$.

Let \$ {S} \$ and \$ {T} \$ be transitive locally compact Markov shifts. A factor map \$ f : {S} → $\{T\}\$isproperif\$f\{-1\}(K)\$isacompactsetforeverycompactset\$K \subseteq \{T\}\$.Inthiswork, wepresentrelationshi$ particular, if \$ f \$ is countable-to-1, so \$ h_{G}({S}) $\leq h\_\{G\}(\{T\})\$$.

Theorem:$Let\$\{S\},\{T\}\$betransitivelocallycompactMarkovshiftsandlet\$f:\{S\} \to \{T\}\$afactormapfinite$-$to-1.Thenh\_\{G\}(\{S\}) = h\_\{G\}(\{T\})$.

Theorem: Let \$ {S} , {T} \$ be locally compact Markov subshifts and let \$ f : {S} → $\{T\}\$afactormapproper.Thenh\_\{G\}(\{S\}) \geq h\_\{G\}(\{T\})$.

Theorem: Let \$ {S} , {T} \$ be locally compact Markov subshifts and let \$ f : {S} → $\{T\}\$afactormapcountable-to-1proper.Thenh\_\{G\}(\{S\}) = h\_\{G\}(\{T\})$.

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*Speaker

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