

Departmental Colloquium

Computability of topological entropy and pressure for symbolic systems beyond finite type

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Abstract: The computability of dynamically defined objects has been a subject of intensive study over the past two decades. This includes important results concerning the computability of invariant sets (e.g. Julia sets), entropies, natural invariant measures, Lyapunov exponents, etc. In this talk we consider symbolic dynamical systems given by the shift map on a finite alphabet-shift space X . We identify the computability of the topological entropy $h_{\text{top}}(X)$ and topological pressure $P_{\text{top}}(X, \phi)$ as a function of the shift space X and potential ϕ . This question has previously been studied by Burr et al., Hertling and Spandl, and Spandl in some special cases. In this talk we address the computability question for general shift spaces. One of our results states that the entropy function $X \mapsto h_{\text{top}}(X)$ is computable at a shift space X_0 iff X_0 has zero topological entropy.

Friday, October 25 at 3:00 PM in 636 SEO