Computable Symbolic Dynamics

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Abstract

We investigate computable subshifts and the connection with effective symbolic dynamics. It is shown that a decidable Π^0_1 class P is a subshift if and only if there is a computable function F mapping $2^{\mathbb{N}}$ to $2^{\mathbb{N}}$ such that P is the set of itineraries of elements of $2^{\mathbb{N}}$. Π^0_1 subshifts are constructed in $2^{\mathbb{N}}$ and in $2^{\mathbb{Z}}$ which have no computable elements. We also consider the symbolic dynamics of maps on the unit interval.