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Ultimate Traces of Cellular Automata

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A cellular automaton (CA) is a parallel synchronous computing model, which consists in a juxtaposition of finite automata (cells) whose state evolves according to that of their neighbors. Its trace is the set of infinite words representing the sequence of states taken by some particular cell. In this paper we study the ultimate trace of CA and partial CA (a CA restricted to a particular subshift). The ultimate trace is the trace observed after a long time run of the CA. We give sufficient conditions for a set of infinite words to be the trace of some CA and prove the undecidability of all properties over traces that are stable by ultimate coincidence.

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