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Decidability in Automatic Sequences

A sequence $(a(n))$ over a finite alphabet is said to be k-automatic if there is a deterministic finite automaton that takes as input an integer n expressed in base k, and reaches a state with output $a(n)$. In this talk I will sketch a decision procedure for answering questions about such sequences, such as periodicity, repetition avoidance, recurrence, and so forth, and discuss some of its ramifications.