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Computing a finite automaton for an integer sequence modulo p^α

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Many integer sequences that arise in combinatorics, for example the sequences of Catalan and Motzkin numbers, have the property that reducing each term modulo p^α produces a p-automatic sequence. We will discuss some algorithms for computing a finite automaton for this p-automatic sequence. Using these algorithms, congruences and other properties of such sequences can be determined automatically, allowing us to generate many new theorems and even resolve some open questions.

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