KIRAN KEDLAYA, MIT, Dept. of Mathematics, Room 2-165, 77 Mass. Ave., Cambridge, MA 02139, USA

Finite automata and algebraic extensions of function fields

A classic theorem of Christol characterizes those power series over a finite field which are algebraic over the rational function field, as those whose coefficients can be generated by a finite automaton. However, not all elements in the algebraic closure of the function field can be represented by ordinary power series; those lying in wildly ramified extensions can only be represented using "generalized power series" in the sense of Hahn–Malcev–Neumann. We describe a natural extension of Christol's theorem, characterizing the generalized power series which are algebraic over the rational function field essentially as those whose coefficients are generated by some finite automaton.