

Using the Frobenius number to determine the transient of Fixed-Point Dynamical Systems over Finite Fields

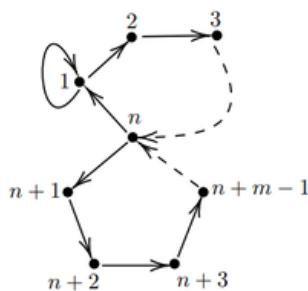
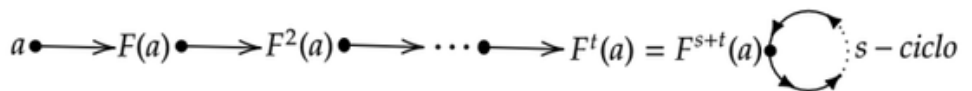
An open problem in the theory of discrete dynamical systems is to link the structure of a system with its dynamics. This paper contains such a link for a family of nonlinear systems over the field with two elements. For a family of systems that can be described by monomials (including Boolean AND systems), one can obtain information about the transient of the system from the structure of the monomials. Recent results, see [1], about the Frobenius Number, allow us to present a formula for the transient of fixed-point systems (that is, how long it takes the systems to stabilize) who have the wedge of three cycles, embedded in their dependency graph.



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$$\mathcal{X}_F = C_1 \vee C_n \vee C_m$$

[1] A. TRIPATHI. FORMULAE FOR THE FROBENIUS NUMBER IN THREE VARIABLES. JOURNAL OF NUMBER THEORY 170 (2017) 368-389.

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