University of Puerto Rico Mayaguez Campus
Faculty of Arts and Sciences
Department of Mathematical Sciences

THE DEPARTMENT OF MATHEMATICAL SCIENCES PROUDLY PRESENTS

COLLOQUIUM

FALL 2016

DETERMINING STEADY STATE BEHAVIOUR OF DISCRETE MONOMIAL DYNAMICAL SYSTEMS

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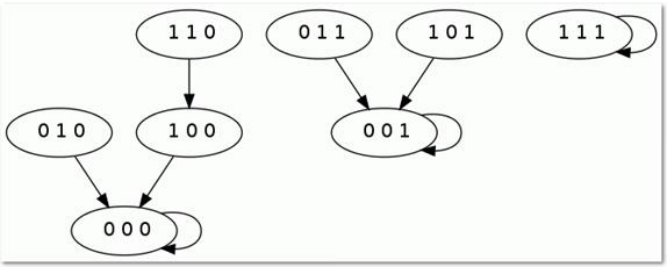

ABSTRACT. In previous work Colón-Reyes et al [3] developed criteria for determining when a discrete monomial dynamical system reaches steady state behaviour. These criteria depend on determining when a certain matrix over a finite ring, that is not a field, defines a fixed point system. It was not until recently that criteria to determine linear steady state behaviour over rings have been found. Using these new results we present a new algorithm to determine steady state behaviour of monomial dynamical systems over finite fields. Delgado-Eckert [4] has also obtained an algorithm for the finite field case, but his algorithm does not take into account the result in [3] and requires $O(n^4\ q^2 \log\ q)$ integer operations. Our algorithm requires only $O(n^3 \log(n\ \log\ q))$ integer operations.

3. O. Colón-Reyes, A. Jarrah, R. Laubenbacher, and B. Sturmfels, Monomial dynamical Systems over Finite Fields, Journal of Complex Systems 16 (2006), 333-342.
4. E. Delgado-Eckert, An Algebraic and Graph Theoretic Framework to Study Monomial Dynamical Systems over a Finite Field, Complex Systems, 18 (2009), 308-328.

Sanchez Hidalgo (SH) 205, 1045 AM
Refreshments will be served 15 minutes before the colloquium at SH 004