

MATHEMATICS DEPARTMENT
North Carolina State University

DIFFERENTIAL EQUATIONS SEMINAR

Monday, May 10, 2004
2:35 p.m. 330 Harrelson Hall

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“On the periodic nature of solutions to the reciprocal difference equation with maximum”

Abstract

We prove that all positive solutions of the difference equation

$$x_n = \max\left\{\frac{A_i}{x_{n-i}} : 1 \leq i \leq k\right\}$$

are eventually periodic, and that the prime period for any given sequence A_1, \dots, A_k is bounded for all positive initial sequences x_{k-1}, \dots, x_0 . A lower bound, growing faster than polynomially, on the maximum prime period for a system of size k is given, based on a model designed to generate long periods. Systems with unbounded preperiod and systems with A or x allowed to be nonpositive will also be discussed.

Please note unusual day.

Graduate students are invited to attend.

Questions, comments, and offers to talk should be directed to Steve Schecter, 919-515-6533, schecter@math.ncsu.edu.