1014-39-1706 **Kenneth S. Berenhaut** (berenhks@wfu.edu), Department of Mathematics, Wake Forest University, Winston Salem, NC 27109, **John D. Foley*** (folejd4@wfu.edu), Department of Mathematics, Wake Forest University, Winston Salem, NC 27109, and **Stevo Stević** (sstevic@ptt.yu,sstevo@matf.bg.ac.yu), Mathematical Institute of Serbian Academy of, Knez Mihailova 35/I 11000, Beograd, Serbia and Montenegro. *The Periodic Character of the Rational Difference Equation* $y_n = 1 + \frac{y_{n-k}}{y_{n-m}}$.

This talk explores the behavior of positive solutions of the recursive equation

$$y_n = 1 + \frac{y_{n-k}}{y_{n-m}}, \quad n = 0, 1, 2, \ldots,$$

with $y_{-s}, y_{-s+1}, \ldots, y_{-1} \in (0, \infty)$ and $k, m \in \{1, 2, 3, 4, \ldots\}$, where $s = \max\{k, m\}$. The main result is that if $2^i$ is the highest power of 2 which divides $m$, then if $2^{i+1} \nmid k$, $y_n$ tends to 2, exponentially, and otherwise every solution tends to a period $t$ solution, with $t = 2\gcd(k, m)$. This generalizes several known results including that in W. T. Patula and H. D. Voulov, On the oscillation and periodic character of a third order rational difference equation. *Proc. Amer. Math. Soc.* **131** (2003), no. 3, 905–909, where the result was proven for the case $k = 2$ and $m = 3$. (Received September 28, 2005)