1116-11-670 **Andrey Rukhin*** (andrey.rukhin@navy.mil). *On A Simple Recurrence In the Accelerated* $3x+1$ *Minimum-Inverse Problem.*

The aim of this talk is to discuss a simple recurrence within the *Accelerated* $3x+1$ *Minimum-Inverse Map*: we will consider the iterates of the function

$$\mathcal{F}(3k+t) = \begin{cases} 4k+1, & t=1 \\ 2k+1, & t=2 \end{cases}$$

on the set $\mathbb{Z}\backslash 3\mathbb{Z}$ where the argument $3k+t$ is an odd integer.

The talk will analyze the structural properties of rational expressions of the form

$$\frac{\sum_{0\leq u<\tau} 3^u 2^{a(u)}}{3^\tau - 2^{a(\tau)}}$$

where the exponents $\{a(u)\}_{u=0}^{\tau}$ are non-negative integers; such rationals naturally arise when analyzing the functional orbits of $\mathcal{F}$. This talk will highlight a simple recurrence on the set $\{0,1,2,3\}$ for generating the 3-adic canonical representations of such rational expressions; not only does this recurrence expedite the computations of such expressions when $\tau >> 1$, but it also reveals a simple and deep connection between all of the iterate values within a functional orbit of $\mathcal{F}$. (Received September 10, 2015)