1051-58-85 **Krystyna M Kuperberg*** (kuperkm@auburn.edu), Department of Mathematics and Statistics, 221 Parker Hall, Auburn, AL 36849. *Periodic points near an adding machine.* Preliminary report.

Let $\mathbf{C}$ be the Cantor set $\Pi_{n=1}^{\infty}\mathbb{Z}/k_n\mathbb{Z}$ associated with the sequence of integers $(k_1, k_2, k_3, \ldots)$, each greater than one. An adding machine is a homeomorphism $\alpha : \mathbf{C} \to \mathbf{C}$ such that if $\alpha(i_1, i_2, i_3, \ldots) = (j_1, j_2, j_3, \ldots)$, then

1. if for $m \geq 1$, $i_n = k_n - 1$ for $n < m$ and $i_m < k_m - 1$, then $j_n = 0$ for $n < m$, $j_m = i_m + 1$, and $j_n = i_n$ for $n > m$,
2. if $i_m = k_m - 1$ for all $m \geq 1$, then $j_m = 0$ for all $m \geq 1$.

Assume that $\mathbf{C}$ is a subset of the plane $\mathbb{R}^2$ and let $h : \mathbb{R}^2 \to \mathbb{R}^2$ be a homeomorphism such that h restricted to $\mathbf{C}$ is an adding machine. We investigate the existence of points close to $\mathbf{C}$ that are periodic under h. (Received August 16, 2009)