Colin R. Defant* (cdefant@ufl.edu). Anti-Power Prefixes of the Thue-Morse Word.

Recently, Fici, Restivo, Silva, and Zamboni defined a $k$-anti-power to be a word of the form $w_1 w_2 \cdots w_k$, where $w_1, w_2, \ldots, w_k$ are distinct words of the same length. They defined $AP(x, k)$ to be the set of all positive integers $m$ such that the prefix of length $km$ of the word $x$ is a $k$-anti-power. Let $t$ denote the Thue-Morse word, and let $F(k) = AP(t, k) \cap (2\mathbb{Z}^+ - 1)$.

We show that $(2\mathbb{Z}^+ - 1) \setminus F(k)$ is finite whenever $k \geq 3$. For $k \geq 3$, $\gamma(k) = \min F(k)$ and $\Gamma(k) = \max((2\mathbb{Z}^+ - 1) \setminus F(k))$ are well-defined odd positive integers. Fici et al. speculated that $\gamma(k)$ grows linearly in $k$. We prove that this is indeed the case by showing that $1/2 \leq \liminf_{k \to \infty} (\gamma(k)/k) \leq 9/10$ and $1 \leq \limsup_{k \to \infty} (\gamma(k)/k) \leq 3/2$. In addition, we prove that $\liminf_{k \to \infty} (\Gamma(k)/k) = 3/2$ and $\limsup_{k \to \infty} (\Gamma(k)/k) = 3$. (Received September 03, 2016)