

With each real number θ , $0 < \theta < 1$, we can associate the so-called *characteristic word* $w = w(\theta)$, defined by

$$w_n = \lfloor (n+1)\theta \rfloor - \lfloor n\theta \rfloor,$$

for $n \geq 1$. We prove the following: if θ has a purely periodic continued fraction expansion, then $w(\theta)$ is a fixed point of a certain homomorphism $\varphi = \varphi_\theta$.