James Cannon, Mark Meilstrup* (markmeilstrup@gmail.com) and Andreas Zastrow. The period set of a map from the Cantor set to itself.

Let $f$ denote a map from the Cantor set $C$ to itself. If $x \in C$ and if there is a positive integer $m$ such that $f^m(x) = x$, then we call $x$ a periodic point of $f$. If $m$ is the least such integer, then we call $m$ the period of $x$ and write $p(x) = m$. We define the period set of $f$ to be the collection $P(f) = \{p(x) : x \text{ is periodic}\}$.

Because the Cantor set $C$ is the most flexible of all compact metric spaces with an interesting topology, we would expect the period sets of its self-maps to be completely unrestricted. We prove this to be the case provided that, in addition, one allows points that are not periodic.

However, if every point $x$ is periodic, we show that a surprising finiteness condition is imposed on $P(f)$: namely, there is a finite subset $B$ of $P(f)$ such that every element of $P(f)$ is divisible by at least one element of $B$. (Received September 22, 2010)