1014-37-995 **Keith Burns*** (burns@math.northwestern.edu), Department of Mathematics, Northwestern University, Evanston, IL 60208, and **Boris Hasselblatt**, Department of Mathematics, Tufts University, Medford, IL 02155. *A new proof of Sharkovsky's theorem.*

Sharkovsky's famous theorem asserts that if l is the least period of a continous map of the interval to itself and l precedes k in the Sharkovsky sequence

$$3,\ 5,\ 7,\ \ldots,\ 2\cdot 3,\ 2\cdot 5,\ 2\cdot 7,\ \ldots,\ 2^2\cdot 3,\ 2^2\cdot 5,\ 2^2\cdot 7,\ \ldots,\ 2^3,\ 2^2,\ 2,\ 1,$$

then k is also the least period of an orbit of the map. We give a variant of the standard proof of the theorem.

Suppose m is the first number in the sequence that is a least period for the map. In the usual proof, it is shown that if m is odd and $m \geq 3$, then any orbit of least period m must be of a special type known as a Štefan cycle; the properties of the Štefan cycle then force the prescence of periodic orbits with all least periods that come after m in the Sharkovsky sequence.

We show, even when m is not even, that the orbits of least period m must be of a special type whose properties force the prescence of periodic orbits with all least periods that come after m in the Sharkovsky sequence. The structure of these orbits is closely related to that of the Štefan cycle. (Received September 26, 2005)