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We present the method from [A. G., P. Zgliczynski, J Differ Equ, 314 (2022),733–751] for finding a wide variety of periodic orbits for multidimensional maps with an attracting n -periodic orbit. The set of periods is induced by the Sharkovskii ordering ' \triangleleft ' of natural numbers:

$$3 \triangleleft 5 \triangleleft 7 \triangleleft \dots \triangleleft 2 \cdot 3 \triangleleft 2 \cdot 5 \triangleleft \dots \triangleleft 2^2 \cdot 3 \triangleleft 2^2 \cdot 5 \triangleleft \dots \triangleleft 2^k \triangleleft 2^{k-1} \triangleleft \dots \triangleleft 2^2 \triangleleft 2 \triangleleft 1.$$

As an example, we prove the existence of n -periodic orbits for all $n \in \mathbb{N}$ in the Roessler system with a 3-periodic orbit, the existence of n -periodic orbits for all $n \in \mathbb{N} \setminus \{3\}$ in a similar system with a 5-periodic orbit, etc. We also expect that this method works for DDEs. The proofs are computer-assisted with the use of CAPD library for C++.

Joint work with Piotr Zgliczynski (Jagiellonian University, Poland).