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Periodic orbits in periodic discrete dynamics. (English) [Zbl 1165.37311](#)
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Summary: We study the combinatorial structure of periodic orbits of nonautonomous difference equations $x_{n+1} = f_n(x_n)$ in a periodically fluctuating environment. We define the Γ -set to be the set of minimal periods that are not multiples of the phase period. We show that when the functions f_n are rational functions, the Γ -set is a finite set. In particular, we investigate several mathematical models of single-species without age structure, and find that periodic oscillations are influenced by periodic environments to the extent that almost all periods are divisors or multiples of the phase period.

MSC:

[37C25](#) Fixed points and periodic points of dynamical systems; fixed-point index theory, local dynamics Cited in 7 Documents
[39A11](#) Stability of difference equations (MSC2000)
[39B12](#) Iteration theory, iterative and composite equations
[26A18](#) Iteration of real functions in one variable

Keywords:

[periodic difference equations](#); [periodic orbits](#); [combinatorial dynamics](#); [population models](#)

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