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Folding and unfolding in periodic difference equations. (English) Zbl 1302.39024
J. Math. Anal. Appl. 417, No. 2, 643-659 (2014).

Summary: Given a p -periodic difference equation $x_{n+1} = f_n \pmod{p}(x_n)$, where each f_j is a continuous interval map, $j = 0, 1, \dots, p - 1$, we discuss the notion of folding and unfolding related to this type of non-autonomous equations. It is possible to glue certain maps of this equation to shorten its period, which we call folding. On the other hand, we can unfold the glued maps so the original structure can be recovered or understood. Here, we focus on the periodic structure under the effect of folding and unfolding. In particular, we analyze the relationship between the periods of periodic sequences of the p -periodic difference equation and the periods of the corresponding subsequences related to the folded systems.

MSC:

39A23 Periodic solutions of difference equations

Cited in 4 Documents

Keywords:

non-autonomous difference equations; alternating systems; interval maps; periodic solutions; periods; cycles; folding; unfolding

Full Text: [DOI](#)

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