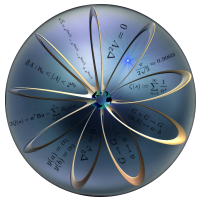

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pseudo-orbit

Canonical name	Pseudoorbit
Date of creation	2013-03-22 14:07:19
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Owner	Koro (127)
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Author	Koro (127)
Entry type	Definition
Classification	msc 37C50
Synonym	pseudo orbit
Synonym	ϵ-pseudo-orbit
Synonym	ϵ-orbit
Synonym	ϵ-chain
Defines	shadow
Defines	shadowing
Defines	shadowed

Let (X, d) be a metric space, $f\colon X \to X$ a function, and let $\epsilon > 0$. An ϵ-pseudo-orbit for f is a sequence $\{x_n : n \in \mathbb{Z}, a < n < b\}$, where $-\infty \leq a < b \leq \infty$, such that $d(x_{n+1}, f(x_n)) < \epsilon$ for all $a < n < b$. A periodic pseudo-orbit is an infinite pseudo-orbit $\{x_n\}$ such that there is some p with $x_{n+p} = x_n$ for all n.

Given $\delta > 0$, the pseudo-orbit $\{x_n : a < n < b\}$ is said to be δ-shadowed by the orbit of x, if $d(x_n, f^n(x)) < \delta$ for all $a < n < b$.