Mathematics > Functional Analysis

Hypercyclic operators on countably dimensional spaces

Andre Schenke, Stanislav Shkarin

(Submitted on 2 May 2012)

According to Grivaux, the group $GL(X)$ of invertible linear operators on a separable infinite dimensional Banach space X acts transitively on the set $\Sigma(X)$ of countable dense linearly independent subsets of X. As a consequence, each $A\in \Sigma(X)$ is an orbit of a hypercyclic operator on X. Furthermore, every countably dimensional normed space supports a hypercyclic operator.

We show that for a separable infinite dimensional Fr\'echet space X, $GL(X)$ acts transitively on $\Sigma(X)$ if and only if X possesses a continuous norm. We also prove that every countably dimensional metrizable locally convex space supports a hypercyclic operator.

Subjects: **Functional Analysis (math.FA)**; Dynamical Systems (math.DS)

Cite as: **arXiv:1205.0414 [math.FA]**

(or **arXiv:1205.0414v1 [math.FA]** for this version)

Submission history

From: Stanislav Shkarin [view email]

[v1] Wed, 2 May 2012 12:58:44 GMT (14kb)

Which authors of this paper are endorsers?