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Frequently hypercyclic semigroups. (English) Zbl 1232.47007

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If X is a separable infinite-dimensional Banach space, a C_0 -semigroup $(T_t)_{t \geq 0}$ of bounded linear operators on X is said to be *hypercyclic* if there exists a vector $x \in X$ such that $\{T_t x \mid t \geq 0\}$ is dense in X , and *frequently hypercyclic* if there exists a vector $x \in X$ such that for any non-empty open subset U of X , the set $\{t \geq 0 \mid T_t x \in U\}$ has positive lower density. In this paper, the authors prove a version for C_0 -semigroups of the so-called Frequent Hypercyclicity Criterion. Applications are given to semigroups generated by Ornstein-Uhlenbeck operators, in particular to translation semigroups on weighted spaces of L^p -functions or continuous functions which, when multiplied by the weight, vanish at infinity.

Reviewer: [Sophie Grivaux \(Villeneuve d'Ascq\)](#)

MSC:

[47A16](#) Cyclic vectors, hypercyclic and chaotic operators

[47D06](#) One-parameter semigroups and linear evolution equations

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Keywords:

chaotic C_0 -semigroups; frequently hypercyclic C_0 -semigroups; translation semigroups

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