Ann. Acad. Rom. Sci.
Ser. Math. Appl.
ISSN 2066 - 6594 Vol. 5, No. 1-2 / 2013

SOME LYAPUNOV TYPE POSITIVE OPERATORS ON ORDERED BANACH SPACES*

Vasile Dragan† Toader Morozan† Viorica Ungureanu‡

Abstract

In this paper we investigate several properties of Lyapunov type operators occurring in connection with the characterization of exponential stability in mean square of systems of linear Itô differential equations perturbed by a Markov process with an infinite countable number of states. A criterion for exponential stability of linear differential equations defined by a Lyapunov operator is derived under the assumption of property of detectability adequately defined for this type of operator valued functions.

MSC: 34G10, 47B65, 34D20

keywords: Lyapunov type operators, ordered Banach spaces, Minkovski norms, exponential stability.

*Accepted for publication in revised form on April 2, 2013.

†vasile.dragan@imar.ro; toader.morozan@imar.ro Institute of Mathematics "Simion Stoilow" of the Romanian Academy, Research Unit Nr.2, P.O.Box 1-764, RO-014700, Bucharest, Romania;

‡Department of Mathematics, "Constantin Brancusi" University, Tg. Jiu, Bulevardul Republicii, nr. 1, jud. Gorj, Romaina, e-mail vio@utgjiu.ro.