Exponential stability, exponential expansiveness, and exponential dichotomy of evolution equations on the half-line

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Abstract: Let $U = (U(t, s))_{t?s?0}$ be an evolution family on the half-line of bounded linear operators on a Banach space X. We introduce operators G_0, G_X and I_X on certain spaces of X-valued continuous functions connected with the integral equation $u(t) = U(t, s)u(s) + ?^t_s U(t, ??)f/(??)d??$, and we characterize exponential stability, exponential expansiveness and exponential dichotomy of U by properties of G_0, G_X and I_X, respectively. This extends related results known for finite dimensional spaces and for evolution families on the whole line, respectively.

Year: 1998
Source title: Integral Equations and Operator Theory
Volume: 32
Issue: 3
Page : 332-353
Cited by: 76
Link: Scorpus Link
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ISSN: 0378620X
Language of Original Document: English
Abbreviated Source Title: Integral Equations and Operator Theory
Document Type: Article
Source: Scopus
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