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J. Math. Anal. Appl. 276 (2002) 98–108

Journal of
MATHEMATICAL
ANALYSIS AND
APPLICATIONS

www.elsevier.com/locate/jmaa

On periodic solutions of nonlinear evolution equations in Banach spaces [☆]

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Received 30 October 2000

Submitted by J. Diestel

Abstract

We prove an existence result for T -periodic solutions to nonlinear evolution equations of the form

$$\dot{x}(t) + A(t, x(t)) = f(t, x(t)), \quad 0 < t < T.$$

Here $V \hookrightarrow H \hookrightarrow V^*$ is an evolution triple, $A: I \times V \rightarrow V^*$ is a uniformly monotone operator, and $f: I \times H \rightarrow V^*$ is a Caratheodory mapping which is Hölder continuous with respect to x in H and exponent $0 < \alpha \leq 1$. For illustration, an example of a quasi-linear parabolic differential equation is worked out in detail.

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Keywords: Evolution equation; Time-periodic solution; Quasi-linear parabolic differential equation
