

EXISTENCE RESULTS FOR EVOLUTION EQUATIONS WITH SUPERLINEAR GROWTH

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Dedicated to the memory of Professor Ioan I. Vrabie

ABSTRACT. By combining an approximation technique with the Leray–Schauder continuation principle, we prove global existence results for semilinear differential equations involving a dissipative linear operator, generating an extendable compact C_0 -semigroup of contractions, and a Carathéodory nonlinearity $f: [0, T] \times E \rightarrow F$, with E and F two real Banach spaces such that $E \subseteq F$, besides imposing other conditions. The case $E \neq F$ allows to treat, as an application, parabolic equations with continuous superlinear nonlinearities which satisfy a sign condition.

1. Introduction

Let $(E, \|\cdot\|_E)$, $(F, \|\cdot\|_F)$ be two real Banach spaces such that $E \subseteq F$. This work deals with the study of mild solutions for semilinear differential equations

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