Abstract

The notions of resolvent, pseudoresolvent and a few results along with some remarkable properties are recalled. A new concept, the L_∞-type pseudoresolvent is introduced.

The aim of this work is firstly to give a characterization theorem for L_∞-type pseudoresolvents and for the generators of L_∞-type pseudoresolvents. Moreover, the connection between the L_∞-type pseudoresolvents and C_0-equicontinuous semigroups is pointed out.

Secondly, the main part of this work is devoted to approximation of pseudoresolvents and their generators. If $R_n,\ R : \Lambda \to L(X),\ n \geq 1$ are generated pseudoresolvents and $A_n,\ A$ their generators, then it is investigated under which conditions A is approximated by A_n and R is approximated by $R_n,\ n \geq 1$.

In addition, the conditions under which a sequence of generated pseudoresolvents approximates a pseudoresolvent are given, and in this case the connection between generators is studied.

In the last chapter we have proved a theorem of characterization for exponentially bounded semigroups. To any exponentially bounded semigroup we have associated a projective family of semigroups acting on Banach spaces.