

[Blake, Mark D.](#)

A spectral bound for asymptotically norm-continuous semigroups. (English) Zbl 0994.47039
J. Oper. Theory 45, No. 1, 111-130 (2001).

Summary: We introduce a new growth bound for C_0 -semigroups giving information about the absence of norm-continuity of the semigroup and we give a corresponding spectral bound. For semigroups on general Banach spaces we prove an inequality between these bounds and we give a version of the spectral mapping theorem in terms of the new growth bound. For semigroups on Hilbert spaces we show that the bounds are equal and hence obtain new characterizations of asymptotically norm-continuous semigroups and semigroups norm-continuous for $t > 0$ in terms of the resolvent of the infinitesimal generator. In the last section we prove that versions of the spectral mapping theorem holds for the three different definitions of the essential spectrum and give nice relationships between the new growth bound and the essential bound of the semigroup.

MSC:

[47D06](#) One-parameter semigroups and linear evolution equations
[47A10](#) Spectrum, resolvent

Cited in **13** Documents

Keywords:

C_0 -semigroup; asymptotically norm-continuous; spectral mapping theorem; absence of norm-continuity; spectral bound