

[Weiss, George](#)

Two conjectures on the admissibility of control operators. (English) Zbl 0763.93041

Estimation and control of distributed parameter systems, Proc. Int. Conf., Vorau/Austria 1990, ISNM 100, 367-378 (1991).

[For the entire collection see [Zbl 0732.00029](#).]

The paper considers linear control systems described by the differential equation $x'(t) = Ax(t) + Bu(t)$. Here, A generates a C_0 semigroup on a Hilbert space X . X is dense in a larger Hilbert space X_{-1} . The problem is to determine which operators are admissible, meaning that for any input function $u \in L^2[0, \infty)$ (with value in V), the differential equation has an X -valued solution. It is conjectured that a necessary and sufficient condition for admissibility is $(sI - A)^{-1}B \leq K(\operatorname{Re} s)$, for all s in some right half-plane. If true, this would be a generalization of the Carleson measure theorem. Several results are proved which tend to support the conjecture: (1) the condition is necessary, (2) if U is finite-dimensional and A is normal then the condition is sufficient, (3) if e^{At} is left invertible then the condition is sufficient, (4) if A is normal and e^{At} is analytic then the condition is sufficient.

Reviewer: [A. Feintuch \(Beersheva\)](#)

MSC:

[93C25](#) Control/observation systems in abstract spaces

[93C15](#) Control/observation systems governed by ordinary differential equations

Cited in **2** Reviews
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Keywords:

[C₀ semigroup](#); [Carleson measure theorem](#)