

Exponential stability of linear systems under a class of Desch-Schappacher perturbations.

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Abstract

In this paper we investigate the uniform exponential stability of the system $\frac{dx(t)}{dt} = Ax(t) - \rho Bx(t)$, $\rho > 0$, where the unbounded operator A is the infinitesimal generator of a linear C_0 -semigroup of contractions $S(t)$ in a Hilbert space X and B is a Desch-Schappacher operator. Then we give sufficient conditions for exponential stability of the above system. The obtained stability result is then applied to show the uniform exponential stabilization of bilinear partial differential equations.

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