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Iterative algorithm for improved measures of stability robustness for linear state-space models. (English) [Zbl 0683.93029](#)

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Summary: The problem of robust stability of linear time-invariant systems in state-space models is considered. An iterative algorithm based on the frequency domain approach is proposed which leads to new stability robustness measures. The case of structural perturbations is considered and the new bounds are shown to be a significant improvement over recent ones reported [cf. *L. Qiu* and *E. J. Davison*, Proc. 25th IEEE Conf. Decis. Control, Athens/Greece 1986, Vol. 2, 751-755 (New York 1986)]. In addition, it is shown that the directional information on structured perturbations can easily be incorporated in the new robustness criterion. Several illustrative examples are worked out.

MSC:

[93B35](#) Sensitivity (robustness)

[93B40](#) Computational methods in systems theory (MSC2010)

[93D05](#) Lyapunov and other classical stabilities (Lagrange, Poisson, L^p , l^p , etc.) in control theory

[93C05](#) Linear systems in control theory

Keywords:

[robust stability](#); [linear time-invariant systems](#); [structural perturbations](#); [time-invariant](#)

Full Text: [DOI](#)

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