

A Pencil Approach to High Gain Feedback and Generalized State Space Systems

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Abstract: In this paper we study limits of generalized state space systems under high gain feedback modulo system equivalence. Different group actions on the space of system pencils are considered and related to the action of pencil equivalence. A recent result on the orbit closure problem for pencils is applied to obtain necessary conditions for a system to be a limit of a given system under high gain feedback. These conditions are shown to be sufficient for arbitrary state space systems. The result is used to investigate a high gain version of Rosenbrock's problem: invariant factor assignment in the limit via high gain state feedback.

Keywords:

AMS Subject Classification: