Generalized gramian based frequency interval model reduction for unstable systems

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Abstract

Gramian based model reduction is important in order to understand the characteristics of systems which are inherently frequency dependent. Obtaining these gramians involves solving a pair of Lyapunov equations. However, for certain systems these Lyapunov equations are not solvable. In addition, the eigenvalues of the product of the frequency interval controllability and observability gramians may also be complex numbers and these gramians are not applicable to be used in the context of model reduction. To overcome these issues, generalized frequency interval controllability and observability gramians are introduced in this paper and the applicability of these generalized gramians to be used in model reduction is demonstrated.

Author keywords

Controllability and Observability, Semidefinite, Linear Systems, Linear Algebra

Indexed keywords

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References


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