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Generalized gramian based frequency interval model reduction for unstable systems (Conference Paper)

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Abstract

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Frequency interval controllability and observability gramian matrices are important in order to understand the characteristics of systems which are inherently frequency dependent. Obtaining these frequency interval controllability and observability gramian matrices requires 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 therefore these gramians are not applicable to 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. © 2016 Engineers Australia.

Author keywords

 Controllability and Observability Gramians [Linear Systems](#) [Lyapunov Equations](#) [Model Order Reduction](#) [Unstable Systems](#)

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