FREQUENCY INTERVAL MODEL REDUCTION OF COMPLEX FIR DIGITAL FILTERS

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Abstract

In this paper, a model reduction method for FIR filters with complex coefficients based on frequency interval impulse response Gramians is developed. The advantage of the proposed method is that only one Lyapunov equation needs to be solved in order to obtain the information regarding the frequency interval controllability and observability of the system. In addition this method overcomes the limitations of using cross Gramians which are not applicable for filters with complex coefficients. The effectiveness of the proposed method is demonstrated by a numerical example.

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