Model Reduction Via Balanced Realizations: An Extension Andfrequency Weighting Techniques

Al-Saggaf, U.M. Franklin, G.F.;Dept. of Electr. Eng., King Fahd Univ. of Pet.Miner., Dhahran;

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Summary

Two model-reduction methods for discrete systems related to balanced realizations are described. The first is a technique which utilizes the least controllable and observable subsystem in deriving a balanced discrete reduced-order model. For this technique as L norm bound on the reduction error is given. The second method is a frequency-weighting technique for discrete- and continuous-time systems where the input-normal or output-normal realizations are modified to include a simple frequency weighting. For this technique, L norm bounds on the weighted reduction errors are obtained