MODEL REDUCTION USING MULTI-LEVEL SUBSTRUCTURING

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Abstract

The numerical treatment of linear time-invariant dynamical systems requires in many cases the use of model reduction techniques to reduce the complexity of the system. But the applicability of those methods, particularly SVD-based methods, to large systems is often limited. We present a framework based on multi-level substructuring to treat very large systems. The idea is to decompose the original system hierarchically into several sufficiently small systems. Thus, the reduction methods are applied only to the smaller subsystems. We will use this framework to apply different kinds of reduction methods and show that it can be extended to second order systems.