Model reduction and moment matching.

ABSTRACT

In this paper, we proposed a simple way to find model reduction of dynamical system \( \frac{d}{dt} x(t) = Ax(t) + Bu(t) \) \( y(t) = CTx(t) \) where \( x : \mathbb{R} \to \mathbb{R}^n \) is a state vector, \( u : \mathbb{R} \to \mathbb{R}^p \) is input function, \( y : \mathbb{R} \to \mathbb{R}^q \) is a output function, \( A \in \mathbb{R}^{n \times n} \), \( B \in \mathbb{R}^{n \times p} \), and \( C \in \mathbb{R}^{n \times q} \) are the system matrices. Furthermore, we show that error output of single input single output system can be estimated over a certain class of input functions.

Keyword: model reduction; Krylov subspace; Arnoldi algorithm and moment matching.