

Meeting: 998, Houston, Texas, SS 14A, Special Session on Space and Time Decomposition Methods in Computational and Applied Mathematics

998-65-237 **D C Sorensen*** (sorensen@rice.edu), CAAM, 6100 Main St., Houston, TX 77005-1892. *Error Bounds for Model Reduction of Second Order Dynamical Systems.*

Dimension reduction techniques for first order linear dynamical systems are well developed and methods such as balanced reduction possess global error bounds. However, these results do not extend to second order systems. This work derives an error bound in the H2 norm for the reduction of a second order dynamical system. The reduction preserves second order form and is based upon a dominant eigenspace of a controllability gramian. An equivalent frequency domain definition of this gramian is obtained from Parseval's theorem and this form is key to the derivation of the bound. (Received February 28, 2004)