

Constitutive Law Nonlinearity and Model Order Reduction

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ABSTRACT

Model Order Reduction (MOR) denotes the theory by which one tries to catch a model of order lower than that of the real model. This is conveniently pursued in view of the design of an efficient structural control scheme.

When the nonlinear response of the reference structural system affects the nature of the reduced model making it dependent on the visited subset of the input-output space, standard MOR techniques do not apply. The mathematical theory offers some specific alternatives. One of them is applied, in this paper, to a case study focused on a multi-bay, multi-storey plane frame with assigned locations for the potential plastic hinges.

The technique results are compared with those obtained by a mere mechanical condensation of the nonlinearity.

REFERENCES

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