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**Novel modal methods for transient analysis with a reduced order model based on enhanced Craig-Bampton formulation.** (English) Zbl 1428.74207

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Summary: For transient analysis of structural dynamics with reduced order model (ROM), data recovery procedures that use modal methods such as the classical mode-acceleration (MA) and modal-displacement (MD) methods are an important step in order to increase the convergence and accuracy of the solution. In this work, we propose novel MA and MD methods for highly accurate transient analysis with a reduced order model based on enhanced Craig-Bampton (ECB) formulation, which is an extension of the classical Craig-Bampton (CB) method that is a way to reduce the size of a finite element (FE) model. The performance of the proposed data recovery approach is demonstrated with two numerical examples. We also investigate the relation between the proposed and classical MA and MD methods.

**MSC:**

**74S05** Finite element methods applied to problems in solid mechanics

Cited in 1 Document

**65M60** Finite element, Rayleigh-Ritz and Galerkin methods for initial value and initial-boundary value problems involving PDEs

**65N30** Finite element, Rayleigh-Ritz and Galerkin methods for boundary value problems involving PDEs

**Keywords:**

enhanced Craig-Bampton method; reduced order model; mode-acceleration method; mode-displacement method; component mode synthesis; structural dynamics

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