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Convergence of iterative methods for nonclassically damped dynamic systems. (English)

Dynamic structural systems modeled by linear second order differential equations of motion are considered. The damping matrix is assumed to be a real general matrix (nonclassical damping) and therefore cannot be simultaneously diagonalized with mass matrix and the stiffness matrix. Two iterative schemes for determining the system response are presented. A rigorous convergence analysis is given. The methods are illustrated by three numerical examples.

Reviewer: R. Tracht (Essen)

MSC:
74H45 Vibrations in dynamical problems in solid mechanics
70J99 Linear vibration theory
65K10 Numerical optimization and variational techniques

Keywords:
linear second order differential equations; damping matrix; real general matrix; numerical examples

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References:
[17] F.E. Udwadia and R. Kumar, Iterative methods for non-classically damped dynamic systems, Structural Dynamics and
Earthquake Engineering (in press). - Zbl 0810.73034

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