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Vibrations of a beam between stops: Numerical simulations and comparison of several numerical schemes. (English) Zbl 1011.74031

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Summary: We present and compare different schemes used to simulate the vibrations of an elastic beam between two stops. The beam is clamped at one end to a device which may vibrate periodically. The other end is restricted to move between two stops. The contact is modeled by normal compliance condition which describes nonlinear stops and approximates Signorini condition. We use the method of lines to obtain numerical solutions.

MSC:

74H45	Vibrations in dynamical problems in solid mechanics
74K10	Rods (beams, columns, shafts, arches, rings, etc.)
74S30	Other numerical methods in solid mechanics (MSC2010)
65M20	Method of lines for initial value and initial-boundary value problems involving PDEs

Keywords:

viscoelastic beam; constrained vibrations; elastic beam; normal compliance condition; Signorini condition; method of lines

Full Text: DOI

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