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Vibrations of a beam between two stops. (English) Zbl 1013.74033

Dyn. Contin. Discrete Impuls. Syst., Ser. B, Appl. Algorithms 8, No. 1, 93-110 (2001).

Summary: We establish the existence of weak solutions for a model that describes the vibrations of a beam which has one of its ends constrained between two stops. The contact at the free end is modeled either by the classical Signorini unilateral condition, for rigid stops, or by the normal compliance condition, for flexible stops. The beam is considered either elastic or viscoelastic. We prove the uniqueness of weak solution for the problem with viscoelastic beam with normal compliance.

MSC:

- [74H45](#) Vibrations in dynamical problems in solid mechanics
- [74K10](#) Rods (beams, columns, shafts, arches, rings, etc.)
- [74H20](#) Existence of solutions of dynamical problems in solid mechanics
- [74H25](#) Uniqueness of solutions of dynamical problems in solid mechanics
- [74M15](#) Contact in solid mechanics

Cited in **21** Documents

Keywords:

dynamic contact; impact; viscoelastic beam; constrained vibrations; elastic beam; existence; weak solutions; Signorini unilateral condition; rigid stops; normal compliance condition; uniqueness