

A HISTORY-DEPENDENT CONTACT PROBLEM WITH UNILATERAL CONSTRAINT*

ANCA FARCAS[†] FLAVIUS PATRULESCU [‡]
MIRCEA SOFONEA[§]

Abstract

We consider a mathematical model which describes the quasistatic contact between a viscoplastic body and a foundation. The contact is frictionless and is modelled with a new and nonstandard condition which involves both normal compliance, unilateral constraint and memory effects. We derive a variational formulation of the problem then we prove its unique weak solvability. The proof is based on arguments on history-dependent variational inequalities.

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Keywords: viscoplastic material, frictionless contact, unilateral constraint, history-dependent variational inequality, weak solution.

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[†]anca.farcas@ubbcluj.ro, University Babeş-Bolyai, 400110 Cluj-Napoca, Romania

[‡]fpatrulescu@ictp.acad.ro, Tiberiu Popoviciu Institute of Numerical Analysis P.O. Box 68-1 and University Babeş-Bolyai, 400110 Cluj-Napoca, Romania

[§]sofonea@univ-perp.fr, Laboratoire de Mathématiques et Physique, Université de Perpignan Via Domitia, 52 Avenue Paul Alduy, 66860 Perpignan, France