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Computational algorithm for investigation large elastoplastic deformations with contact interaction. (English) [Zbl 1472.74201](#)

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Summary: The paper is dedicated to the construction of a computational algorithm for the investigation of solids, taking into account the material and geometric nonlinearity and contact interaction. In the framework of the previously developed algorithm for the investigation of large elastoplastic deformations of solids the solutions of contact problems are derived. The algorithm has been based on the equation of the principle of virtual work in velocity terms. Contact interaction is modeled over the basis of the master-slave approach with penalty method. The closest point projection procedure is used to find the contact area. For the solution of the nonlinear system of equations incremental method is applied. The numerical implementation is based on the finite element method.

MSC:

74S05 Finite element methods applied to problems in solid mechanics

74M15 Contact in solid mechanics

74C15 Large-strain, rate-independent theories of plasticity (including nonlinear plasticity)

Keywords:

[finite element method](#); [geometric nonlinearity](#); [principle of virtual work](#); [closest point projection procedure](#)

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