

## **Numerical simulation the deformation and failure processes of complex technical object under impact loading**

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The main points of development of numerical tools for the simulation of deformation and failure of complex technical objects under non-stationary conditions of extreme loading are presented. The possibility of extending the dynamic method for construction of difference grids to the 3D case is shown. A 3D realization of discrete-continuum approach to the deformation and failure of complex technical objects is carried out. The efficiency of the existing software package for 3D modelling is shown.

It is shown that the existing software package REACTOR3D has evolved and is suitable to solve the impact problems in the 3D case. The method of dynamic construction of tetrahedral mesh for complex, multiply connected objects is presented. The algorithm for modeling fractured material by discrete particles of finite size is exposed. The key moments of interaction of the fractured material fragments with the boundaries of solid material and with each other are shown. The examples of efficiency of the computational modules for both the regions of solid material and numerous fragments of the fractured material are given.