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ТЕЗИСТЕР

ABSTRACTS

Халықаралық конференция
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show that, using constraints-equality, you can exclude m variables, then the task will be reduced to the problem of the form (1).

In conclusion, these are the main tasks of auxiliary procedures in the method of sequential quadratic programming when solving General convex programming problem assuming sufficient smoothness determine its functions.

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Mathematical modeling of influence of material microstructure to products formation processes

In the development of technological processes of manufacturing and design elements with the specified functional properties of the material necessary to ensure the appropriate structure, which determines its mechanical and physical properties. In the structural mechanics of fundamental role is simulation of the interaction of various scales in the process of deformation and failure to improve the operational properties of product (durability, strength, fracture toughness). [1]

Influence of microdefects to the physical and mechanical properties of the material is studied by Irwin theory of strength, in which the defect is modeled by mathematical cut with ability to spread. In this case, there are singular points at the ends of the cut where stress tends to infinity by the asymptotic law. In Griffith's fracture mechanics study of the influence of defects on the properties of materials comes to a boundary value problem in plane deformation of a body having elliptical shape cutout.

In this paper, by using the structural strength criterion of Neuber - Novozhilov [2], obtained a formula for critical load for plane blunt and sharp cracks. By this formula we made models of sharp crack as a thin ellipse with a ratio of small and major semi axes one to ten. With OpenFOAM software, based on the finite volume methods, by creating a solver for small elastoplastic deformation, we found the shape and size of plastic zone around cracks. As a calculation results A size of plastic zone satisfactorily agrees with the experimental researches of Hahn and Rosenfield [3], and shape with Tuba [3]. The results allow evaluating the impact of the microstructure to ductile material and on the behavior of structures made from such materials.

Most researches in metal processing are performed numerically, while the accuracy of the prediction depends on parameters of numerical schemes, which are not relevant to the mechanical process itself. Thus, it is necessary to build the