CONTENTS AND ABSTRACTS

Riemann type on the real axis. The asymptotic formulas characterizing a field of elastic displacements at far fields of each part of piecewise-homogeneous space as well as distribution of sheared stresses near the edge of crack is obtained.

The plane stress state of infinite viscous-elastic plate with semi-infinite slit, banks of which are welded by different viscous-elastic inclusions, is considered. Taking into account that the inclusions are located in uniaxial stress state [1], the governing system of equations of stated problem consists of singular integro-differential and singular integral equation with respect to tangential stresses, acting at banks of inclusions, is obtained. The behavior of solutions of governing system at the end-points of inclusions and slits is studied. The solution of system is built by the numerical-analytical method of discrete singularities.

The stress state of homogeneous elastic plane, weakened by semi-infinite slit, perpendicularly situated at the absolutely rigid inclusion, is considered. The governing system of singular integral equations with respect to derivatives of functions of displacements' differences and jumping function of stresses, acting at edges of crack, is obtained. The solution of system is built by the numerical-analytical method of discrete singularities.

In this paper an asymptotic method of integration of micropolar theory of elasticity for orthotropic material in the case of plane stress state in thin rectangle is developed. An applied one-dimensional theory of orthotropic micropolar elastic thin bars is built and inherently a model of micropolar orthotropic bars built on the basis of hypotheses method is substantiated.

The contact problem of the interaction of hard-liner and tie with a boundary of a viscoelastic cylinder is considered. It is assumed that the band moves with constant velocity along this border. Friction in the contact region is neglected. At the first stage, the displacement of the boundary of the cylinder attached to her normal workload is defined. Then on the second step an integral equation of the contact problem for determination the contact pressure is derived. In the third stage an approximate solution of this integral equation by the modified Multhopp-Kalandia method is constructed. The graphs of the distribution of contact pressure is presented.

Investigations in Creep Mechanics started at the end of the 19th century. First theories were suggested in the 20th and 30th years of the last century. From this time creep Mechanics is established in structural analysis in the case that the structure or some structural element is used if the loading level is moderate (far from the yield stress), but the temperature level is approximate 0.3-0.4 of the melting temperature of the given material. During the last 70 years the main research direction is focused on the formulation of constitutive equations. Outstanding contributions in this field were made by scientists from the former Soviet Union: among them Yu.N. Rabotnov, N.N. Malinin, L.M. Kachanov, N.Kh. Arutunyan, and R.A. Arutunyan. Now some proposals for constitutive equations are established, but they differ from the point of view of their structure, even from their physical explanation.

vibrations, on the weight of dynamic instability boundary and on the amplitude of non-linear forced and parametric vibrations are investigated. It is shown that the existence of resonant type vibrations near the frequency $\theta = 2\Omega$ is conditioned only by the presence of the inclined magnetic field $\left(H_{01}H_{03} \neq 0\right)$.

solved numerically by collocation method in various laws of variation of thickness and elastic constants. The results of calculation in some cases compared with known exact solutions.

Gevorgyan R.S., Hasratyan M.G. 157
Asymptotic solution of mixed boundary-value problems for the shells of viscoelastic material
Integrating the equations of three-dimensional problem of the theory of viscoelasticity in curvilinear coordinates are derived by an asymptotic recursion formulas for determining the components of the stress tensor and displacement vector of a shallow shell of infinite dimensions of the viscoelastic model of Maslov - Harutunyan. The shell is considered in terms of heterogeneous (physical and mechanical factors vary along the longitudinal coordinates, but are constant in thickness). The cases are shown when on the surfaces of the shell the conditions of second and mixed boundary value problems of elasticity theory are given.

Golovin N.N., Zarubin V.S., Kuvyrkin G.N. 162
The estimates of the effective characteristic of modified fullerenes composite
A mathematical model of the composite (an isotropic matrix containing a relatively small volume fraction of nanoparticles) is obtained. Bulk modulus and shear modulus are estimated based on the fullerene core model, which allowed us to obtain the effective values of these modules as a whole for the composite. The evaluation of the effective thermal conductivity of the composite, modified fullerenes, are also presented.

Golyadkina A.A. Kirillova I.V., Kossovich L.Yu., Shuchkina O.A 167
Modeling of haemodynamics of coronary arteries
Coronary artery (CA) and heart tissue mechanical properties are studied in this work. Their 3D computer models were built. Numerical analysis of stress-strain state and haemodynamics of left and right coronary arteries was performed using the aforementioned models and taking into account an influence of the healthy and pathologically affected heart muscle on the CA.

Goryacheva I.G., Antonov F.K., Anferov G.M., Lyubicheva A.N. 172
Modeling of the effect of cartilage on stress distribution in metacarpal-carpal joint of the thumb
The study of stress state of the thumb carpometacarpal joint (healthy and pathological) is carried out using the methods of contact mechanics. The geometric model of the joint was based on the results of computer tomography data in the position of extension of the thumb obtained in National Cheng Kung University (Taiwan). The contact interaction for a given geometry was analyzed numerically using ANSYS code. From the numerical solution of the contact problem the comparative analysis of the contact and internal stresses inside the bone tissues in the presence of a uniform layer of cartilage, as well as in the case of the pathology connected with a decrease or absence of cartilage layer, was carried

Grigoryan M.S. 177
On the contact interaction of an elastic half-space or a layer with a system of stringers under antiplane deformation
Problems of contact interaction of an elastic half-space or an infinite elastic layer with a system of an arbitrary finite number of stringers under antiplane deformation are considered.

Grigoryan H.F. 182
Curving of asymmetrically inhomogeneous plate on the thickness in a neighborhood of rigidly fixed edge
In this work the problems of asymmetrically inhomogeneous plates on a thickness on the basis of a hypothesis of Kirchhoff are investigated, also are defined the bending, buckling moment and torsion torque and intersecting force in a neighborhood of fixed edge of a plate. Asymmetry is understood in sense, that if functions mechanical characteristics of plate material are continuous on thickness coordinate they are asymmetrical concerning a median plane.

The problem of longitudinal elastic waves propagation is considered for a rod with periodically alternated materials separated by attached masses. In the framework of the Floquet theory relation is obtained between wave frequency and Floquet wave number. The result demonstrates that in homogeneous rod the existence of Floquet waves caused by periodically system of attached masses are possible.