

Report of the department “Theory of elasticity and plasticity” of IMM ANAS for 2015.

In the department work 9 research scientists: doct.phys.math.sci.-3, prof.-4, ass.prof.-3, cand.ph.m.s.-3, technicians-3.

In the departments 9 works on "**Oscillatory motion of strength and stability of viscous, elastic, plastic structural elements**" are carried out. On the report period 10 papers were published, 14 papers to be published, 4 papers are prepared for publication.

Work A: Oscillatory motion of coating on homogeneous viscoelastic foundation. (Gadjiev V.D.)

With regard to resistance of external medium, by means of approximate analytical methods a formula for determining the frequency was obtained.

Work B: Load-carrying capacity of sandwich annular plates fixed with fibers. (Ilyasov M.Kh.)

A formula for loads limit and medium resistance was obtained.

Work C, G: Investigation of boundary value problems of shells and smooth ridge plates. (Musayev Kh.I., Huseynov F.S.)

Exactness of the solution obtained by solving smooth and ridge cylindrical coatings was shown.

Work D: Oscillatory motion of a rectangular orthotropic plate of variable thickness located on in homogeneous foundation. (Gasimov H.M.)

In the work natural frequency of oscillatory motions of an orthotropic rectangular plate of variable thickness was defined.

Work E: Stability of plate made of a sandwich composite material. (Zeynalova T.Y.)

Critical forces estimates at unilateral compression of a rectangular plate made of a sandwich composite material were determined.

Work F: Parametric oscillations of cylindrical shells with referend to curvilinear orthotropy. (Mekhtiyev M.A.)

A curve separating unstable domain from stable domain on the plane forces-fregnences was defined.

Work F: Oscillatory motions of a pipe located on an inhomogeneous viscoelastic foundation. (Shukurova N.A.)

The formula for determining the specific frequency of the oscillating movement directly to the piping.

Work H: Solution of thermoplasticity problem for perforated medium of separating heat. (Shahbandayev E.G.)

Certain laws of stress distribution for the thermal conductivity of the perforated separating medium heat.

Work I: Free oscillatory motion of an orthotropic cylindrical coating located along the foundation characterized by two constants. (Mirzoyeva G.R.)

Special solutions are found by the superposition of vibrational motions of orthotropic cylindrical cover.

On the scientific-organizational activity.

Employees of the department continue their research and teaching activities, actively participate in the JINR workshop, department and scientific conferences, make presentations. Employee of the department G.R. Mirzoyev defended her thesis "Study of propagation of nonstationary waves in rectangular prisms and rays" for the degree of Doctor of Philosophy in mechanics. 2 of dissertation V.D. Hajiyev presented their dissertations at the dissertation council, one completed his doctoral work. Work doctoral N. Rzaeva (in absentia) and A. Shiriyev (full-time) goes according to plan. Areas of teaching activities of the Institute employees are different so Hajiyev V. works at Architecture and Construction University, M. Ilyasov at Aviation Academy, M. Mehtiev at the Azerbaijan Economic

University, Gasimov at Baku State University, G.R. Mirzoyeva at the State Academy of Management under the President of Azerbaijan. V.C. Gadjiev is a member of the Academic Council and a member of the thematic seminar in the University of Architecture and Construction, Deputy Chairman of the seminars, **M. Ilyasov** is member of the expert commission Higher Certificate Commission. **Gadjiev V. Finished the work SOCAR grant project titled "Choosing the optimal characteristics of resistance of structural elements used in oil production and transportation."** Employees of the department are involved in the research program "The variety of endemic and rare species of flora of Azerbaijan". Conducted a study of a mathematical model predicting the danger of destruction and reduction of endemics and rare species of flora of Azerbaijan.

Head of department

doct.ph.m.s. prof. V.J. Gadjiev.