

Automation and management of technological processes and productions

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CALCULATION OF THE STRESS-STRAIN STATE OF THE ELASTIC DISC OF VARIABLE THICKNESS UNDER VIBRATION OF BLADES

The aim of research is the calculation of the stress-strain state of the elastic disc of variable thickness under vibration of blades. To this end, the new numerical-analytical method is developed for such problems of three-dimensional theory of elasticity. The solution is built using the Fourier series. The Fourier coefficients are found from boundary value problems for the systems of ordinary differential equations along the radial coordinate. Typical results of calculations are shown. Obtained results may be used to calculate the fatigue fracture of discs of the gas-turbine engine due to vibrations.

Stress-strain state, disc of variable thickness, high frequency cyclic loading, implicit finite-difference scheme, Fourier series.

System analysis, management and information processing

Konovalov A.A., Moskovchenko D.C., Glazunov V.A., Tigiev A.A., Gashev S.N.

APPROXIMATIONS OF BIOTA' CLIMATIC DEPENDENCE IN THE NORTH OF TYUMEN REGION

Quantitative regularities of distribution and hierarchy of biotic taxons in the north of Tyumen region are investigated. Nature of their distribution depending on geographical subzones has been established. There have been found formulas of climatic and hierarchical dependence of taxons.

The North of Tyumen region, climate, indexes of dryness and heat, biota, taxons.

Govorkov D.A., Solovyev I.G.

GEOINFORMATION TOOLS FOR ANALYSIS AND MODELLING TRANSFORMATION OF SPECIFIC AND QUANTITATIVE STRUCTURE OF THE VEGETATION COVER OF THE YAMAL PENINSULA

There has been submitted a version of processing a model of information system data analysis for Yamal Peninsula's vegetation on the basis of phytocoenosis formations maps. The implemented version of the system is based on a database. The database consists of more than four hundred plants species with reference to thirty formations constituting a legend of electronic map scale of 1: 1,500,000.

Formation, data, geographic information system, analysis, diagram, enquiry.

Tsibulsky V.R., Arefyev S.P.

THE COMPARATIVE ANALYSIS OF DYNAMICS IN WOOD AND ANNULAR CHRONOLOGY FROM DIFFERENT PARTS OF WESTERN SIBERIA NORTH

The given article presents data on wood and annular chronology of larch trees growing in the north of Western Siberia. The core has been taken in the settlement Labytnangi, near town Nadym and ledgement Moim. The statistical analysis has been carried out and approximations of the trend have been obtained by a polynomial of the fifth degree.

Wood and annular chronology, larch, North of Western Siberia, statistical analysis.

Taranov Yu.A., Borzykh V.E.

MODELLING DIAGNOSTICS OF THYROID GLAND PATHOLOGY IN PERINATAL CENTRES

An approach to creating models for diagnosing thyroid gland pathologies in perinatal centres has been examined. Such model can be used in the frames of realization the system of supporting in diagnostic decisions taking in the context of development ACS of managing medical and diagnostic process in the perinatal centres. Description of thyroid gland diseases has been given, diagnostic parameters have been revealed. Different approaches to the solution of tasks connected with pathologies

classification have been considered. There has been suggested the set of production rules for various kinds of thyroid gland pathologies at pregnancy.

Medical informational systems, perinatal centre, pregnancy pathologies, diagnostic models.

Mathematical modeling, numerical methods and complexes of programs

Tsibulsky V.R., Ganopolsky M.G.

DEFINITION OF A FUZZY SET BASED ON PROBABILISTIC SPACE OF INDUCTIVE LOGIC

Definitions of a fuzzy set given by various scientific schools have been presented. There have been revealed scopes of their application and problems of practical realization. There has been offered a definition expanding the basic one due to the introduction in the form of a membership function a degree of uncertainty of probabilistic events (states) being the elements of a fuzzy set.

Fuzzy set, definition, uncertainty function, uncertainty degree.