

АННОТАЦИИ СТАТЕЙ НА АНГЛИЙСКОМ ЯЗЫКЕ

Alexeev B.V. NON-LOCAL PHYSICAL KINETICS. In the article the basic principles of non-local physics are considered from the methodical point of view. The theory is delivered on the qualitative level avoiding excessively cumbersome formulas. As result the corresponding material can be used for the student teaching in the universities.

Keywords: Foundations of the theory of transport processes, The theory of physical kinetics, Generalized hydrodynamic equations, The theory of turbulent flows, Foundations of non-local physics.

Arkhipov S.V. CALCULATION OF DYNAMICS OF BEAMS SYSTEMS WITH ELASTICALLY MOUNTED MASSES IN PROGRAM PACKET "MOCODISS". The common approach is expounded in realization of algorithms of calculation transverse vibrations of single-measure systems of beams with masses on the basis of method spline-transformation of coordinates. The description of program packet MOCODISS realizes present method. The comparative analysis of punctuality of calculation was taken for model tasks. The significant diapason of change of rigidity elastic hinges was computed for connecting beams of single-measure system.

Keywords: vibration, single-measure system of beams; elastic hinges, series of discrete masses, method spline-transformation of coordinates, program realization.

Bubenchikov A.M., Poponin V.S., Melnikova V.N. THE MATHEMATICAL STATEMENT AND SOLUTION OF SPATIAL BOUNDARY VALUE PROBLEMS BY MEANS OF SPECTRAL ELEMENT METHOD. The mathematical statement and solution of boundary value problems are described in this paper. The discretization of three dimensional Poisson equation by means of spectral element method is emphasized. The coordinate transforms are fully described.

Keywords: Spectral elements method, Poisson equation, unstructured grids, viscous fluid

Gorelikov A.V., Rjahovsky A.V. NUMERICAL SIMULATION OF NATURAL CONVECTION IN SPHERICAL LAYER. The computer programs for the numerical simulation of heat transfer and incompressible fluid flow in a spherical layer are created. Parallel calculations are organized by OpenMP. The results of numerical study of natural convection in the uniform rotating spherical layer in the gravitational field with the spherical symmetry are presented. Grashof number and Reynolds number varied during calculations.

Keywords: numerical simulation, natural convection, rotation, parallel realization.

Grishin A.M. ON MATHEMATICAL MODELLING OF PEAT FIRES. A short review of works and a general system of equations for mathematical modelling of peat fires is presented. A programme of further scientific investigations of these fires for analyzing conditions of their origin and spread, and also for creating new ways of fighting them is suggested.

Keywords: Peat, peat fire, physical model, pyrolysis and peat drying, burning, Transfer processes, atmosphere, mathematical modelling.

Lazarev V.R. ON SOME EQUIVALENCES ON THE CLASS OF TYCHONOFF SPACES. Some method, generating the equivalence relations between Tychonoff spaces, is presented. It is shown, that l-, u-, and t-equivalences are particular cases of this general construction. The new examples of equivalences, preserving compactness, Lindelöf number and dimension, are given.

Keywords: the space of continuous functions, l-equivalence, t-equivalence.

Onishuk N.M. NON-HOLONOMIK HYPERPLANE IN THE FOUR-DIMENSIONAL EUCLIDEAN SPACE. We consider a non-holonomic distribution of a particular form, the so-called non-holonomic hiperplane, and the vector field of its normal vectors E_4 . There exists only one non-holonomic plane in E_4 . It has no singular points. The equation of the non-holonomic hiperplane is obtained in a stationary coordinate system. We also study holonomic distributions that are invariantly connected with the non-holonomic hiperplane.

Keywords: nonholonomic geometry, vector field .

Parovik R.I., Firstov P.P. THE ALGORITHM OF CALCULATION OF DENSITY OF A STREAM OF RADON (^{222}Rn) FROM THE SURFACE OF THE GROUND. The algorithm of calculation of density of a stream of radon (DSR) on a terrestrial surface is offered. On the basis of the given algorithm the program "ПЭКЭМ" is developed. The program spends visualization of calculations DSR and initial experimental data. The program has passed testings for networks of stations of monitoring подпочвенного radon in area Petropavlovsk - the Kamchatka geodynamic range.

Keywords: radon, density of a stream of radon, carry of radon.

Semenov A.T. ASYMPTOTIC EXPANSIONS OF THE RUIN PROBABILITY FOR A GENERALIZED POISSON PROCESS. Let $\xi(t)$, $t \geq 0$, be a generalized Poisson process, and let $\tau(x) = \inf \{t: \xi(t) \geq x\}$, $x > 0$. The complete asymptotic expansions of the distribution $\tau(x)$ are obtained for $x \rightarrow \infty$ under Cramér type condition.

Keywords: generalized Poisson process, ruin probability, Laplace-Stieltjes transform, factorization method, asymptotic expansion.

Fazliev A.Z., Rodimova O.B., Sapozhnikova V.A. ELECTRONIC DOCUMENT COLLECTION ON THE TUNGUSKA PHENOMENON PROBLEM. Factographic electronic collection (www.tunguska.tsc.ru) is created of the materials on the Tunguska event investigations. As a base of the collection the documents of the Tomsk state archive are used, as well as the private archives of the members of Complex amateur expedition (CAE), monographs, papers, photos, pictures, unique albums. The materials became widely available for researchers which promote a study of the problem history as a whole, and of mechanisms of formation and self-regulation of social groups over interests using CAE as an example.

Keywords: Electronic collection, Tunguska phenomenon .

Fomina E.A. ON A CLASS OF TWO-ORDERED FIELDS. In the article a method of construction of infinitely narrow two-ordered fields on the base of a linearly field is presented.

Keywords: Linearly ordered fields, transcendence basis, two-ordered fields.

Khmyleva T.E., Genze L.V. SPACES OF FUNCTIONS OF THE FIRST BAIRE CLASS IN THE TOPOLOGY OF POINTWISE CONVERGENCE AND THEIR l -EQUIVALENCE. We consider sufficient conditions of linear homeomorphism of spaces of all real-valued or 2-valued functions of the first Baire class on ordinals, with the topology of pointwise convergence.

Keywords: Functions of the first class of Baire, linear homeomorphisms, ordinals, topology of pointwise convergence.

Yakovenko P.G. TRANSITIONAL PROCESSES CONTROL IN THE SYSTEM WITH LIMITATION OF COORDINATES. The method of control synthesis for both linear and non-linear systems with limited coordinates, which is based on multiple counting of equations, methods of dynamic programming and imitational modeling, on the principals of "change target" and "leading week element" is offered. The method of synthesis optimally quick control of systems is composed of equations found for small steps.

Keywords: Method, synthesis, control, systems, limited coordinates.