

# Summaries

UDC 519.714.2

**N.S. Dyomin, S.V. Rozhkova, O.V. Rozhkova**  
**ANALYSIS OF CONTINUOUS-DISCRETE ESTIMATION OF STOCHASTIC PROCESSES THE CASE OF OBSERVATIONS CHANNELS RESERVATION WITH MEMORY IN THE PRESENCE OF ANOMALOUS NOISES**

The paper investigates the properties of filter-interpolator-extrapolator concerning 1) optimality of procedure of the observation vector anomalous components elimination, 2) the dependence of the accuracy of the estimation on the dimension of the vector of the anomalous noise and 3) the structure of action of its components on the components of the observation vector.

UDC 681; 510.6

**O.V. Stukach, E.D. Golovin**  
**SIMULATION OF PHYSICAL PROCESSES USING DIFFERENTIAL-CHEBYSHEV TRANSFORMATIONS**

The paper formulates the main disadvantages of the method of differential-Taylor-transformations and describes transition from a power basis set to the basis of orthogonal polynomials. The degree of convergence of series is shown to be improved under transition to expansion in terms of first genus Chebyshev polynomials and biased Chebyshev polynomials. The more universal algorithm to calculate the discretized of differential spectrum is formulated. It is shown that the value of spectrum discretized is steady decreased with increasing its number. In this case the calculation of discretized may be stopped upon they reached necessary small value, that is impossible in power basis. The advantages of transition to expansion in terms of first genus Chebyshev polynomials and biased Chebyshev polynomials are demonstrated in examples.

UDC 530.12:531.51

**V.V. Lasukov**  
**ATOMIC MODEL OF THE EARLY UNIVERSE**

The paper studies the quantum theory of the early plane Universe with a negative cosmologic constant imitated by uniform scalar potential. The early Universe with a negative cosmologic constant is shown to be like gravitation atom, which can serve as a source of usual matter due to spontaneous irradiation of massive particles.

UDC 541.12.012.3

**N.P. Gorlenko, Yu.S. Sarkisov**  
**SYSTEM, STRUCTURAL AND INFORMATIONAL ORGANIZATION OF DISPERSE SYSTEMS**

Peculiarities of micro and macroscopic features interaction from system, structural and information forms of dispersn systems organization are considered. The conception of low energetic correlation's in the given compositions those are realized on the field and material levels is suggested.

UDC 547.631

**A.A. Bakibayev, V.A. Yanovsky, A.V. Skarlygin**  
**NEW PREPARATIVE ABILITIES OF  $\text{NaBH}_4/\text{I}_2$  REDUCTIVE SYSTEM**

The reactions of the new promising reductive system  $\text{NaBH}_4/\text{I}_2$  with some 1,2-diketones, hydroxyl-containing phenanthrens derivatives and with some heterocyclic compounds (intermediates in synthesis of medicines) have been investigated. It has been shown that using the  $\text{NaBH}_4/\text{I}_2$  system led to more complete reduction of the initial substrates in good yields. This seems to be of interest for preparative application of the given in the organic synthesis.

UDC 552.164:550.42

**A.I. Chernishov, E.E. Pugacheva**  
**THE ROLE OF PLASTIC DEFORMATION IN DISTRIBUTION OF GOLD IN ULTRAMAFIC ROCKS OF BAIKALO-MUYISK OPHIOLITIC COMPLEX**

The gold distribution in plastically deformed ultramafic rocks of the Baikalo-Muyisk ophiolitic complex is discussed in the work. The anisotropic deformation fabric of the Paramsky and the Shamansky ultramafic massifs formed during the process of their long mantle-crust evolution is shown. The typification and the dynamic-kinematic interpretation of olivine microstructures are fulfilled. The analysis of the gold distribution in ultramafic rocks allows to reveal the important role of plastic deformations in its remobilization and redistribution. The considerable migratory mobility of gold is detected in rocks subjected to syntectonic recrystallization in the Earth's crust conditions under of wide temperature variations ( $T \approx 1000 \dots 500$  °C), high strain (100...120 MPa) and high deformation rate (to  $10^{-2} \text{ s}^{-1}$ ). Anomalous high gold contents are revealed in ultramafic rocks undergone the most intensive plastic deformations.

UDC 631.41:631.416.4

**V.P. Seredina**  
**ESTIMATION OF TECHNOGENIC INFLUENCE OF OIL ON THE SOIL PROPERTIES IN THE WESTERN SIBERIA**

The paper presents field data and experimental results of influence of oil on the soil properties in oil production regions of the Western Siberia. The specific influence of oil pollution on the mail parameters of soil (morphologic structure, chemical and physical properties, food regime) is proved. The obtained results can be used in soil-ecologic monitoring and recultivation of soil.

UDC 541.183.12

**A.P. Vergun, G.S. Tikhonov, L.I. Dorofeeva**  
**DEIONIZATION OF NICKEL-CONTAINING SOLUTIONS OF GALVANIC PRODUCTION**

The paper presents the experimental results on extraction of nickel ions from solutions of galvanic production by the method of electro-dialysis in mixed layer of ionite. The carried out research shows the effective holding of nickel ions within ion-exchange fitting.

UDC 621.731.3.322-81:621.314.21.3.042, 681.142

**V.S. Loginov**  
**HEAT EXCHANGE WITHIN A PLATE UNDER ACTION OF INNER THERMAL SOURCES AND SMALL FURIES NUMBERS ( $\text{Fo} < 0,001$ )**

Approximal method of solving the problem of heat conductivity for small Furies numbers ( $\text{Fo} < 0,001$ ) is proposed in the paper.

UDC 546.161:544.55.001.57

**B.A. Vlasov, I.A. Tikhomirov, S.A. Sosnovsky**  
**THERMODYNAMIC SIMULATION OF PLASMA-CHEMICAL PROCESSING OF METAL-FLUORIDES**

The paper presents the results of multi-element thermodynamics analysis of the process of non-organic metal-fluorides under low-temperature plasma of high-frequency discharge using the method of equilibrium thermodynamic simulation. The calculated example of  $\text{SiF}_4$  and  $\text{GeF}_4$  thermo-hydrolyze in the flow of water-vapor high-frequency plasma shows that the most output of metal oxides lays in the temperature range from 1500 to 2500 K under the pressure in discharge zone of 0,05 MPa and proportion of argon, water and processing metal fluoride as 1:1:1.

UDC 621.373.826

**O.V. Zhdaneev, G.S. Evtushenko**  
**MECHANISMS OF INFLUENCE OF HALOGENHYDROGENS**  
**IMPURITIES ON GENERATIVE CHARACTERISTICS OF**  
**Cu-VAPOR LASER**

The paper gives systematization and generalization of up-to-date information on mechanisms of influence of halogenhydrogens impurities (HBr, HCl) on kinetics of active medium of Cu-vapor laser. It analyses the differences of influence of HBr, HCl molecules on generative characteristics of Cu-vapor lasers. The work states that kinetics of Cu-vapor lasers is not studied quite well and it is necessary to carry out additional theoretical and experimental research of these lasers.

UDC 530.1(075.8)

**G.V. Yerofeeva, Yu.Yu. Kriuchkov, E.A. Skliarova,**  
**V.M. Maliutin**  
**SCIENTIFIC AND METHODOLOGICAL ASPECTS OF DEVELOPMENT**  
**AND APPLICATION OF TEACHING SYSTEMS ON NATURAL**  
**SCIENCE DISCIPLINES**

The paper presents the results of analyzing pedagogical technologies, shows principles of development of teaching systems and describes the conception of computerized lesson as a teaching system. It also realizes this conception on development of interactive teaching system on physics basing on Macintosh and IBM PC platforms. The paper also describes the work of the teaching system and the results of its testing in education process.

UDC 614.2:374

**K.A. Shaporin, V.T. Ivanov, O.G. Beresteneva, L.I. Ivankina**  
**COMPLEX PSYCHO-PHYSIOLOGICAL CHECK-UP OF**  
**STUDENTS. AIM, STRUCTURE, RESULTS**

Information SW complex of psycho-physiological check-up of organism state allows to carry out complex test of students' health, current state and psychological and physical reserves by express-methods. When developing the SW the methods of integral evaluation of data were used.

UDC 66.012

**V.P. Ivanov**  
**PERSPECTIVES OF CHEMICAL INDUSTRY CAUSED BY**  
**ENTERING OF RUSSIA IN WTO**

The paper analyzes the sequences of entering of Russia in the World Trade Organization. Solution of this problem is of critical importance for development of chemical industry of the country.

UDC 621.039.524

**I.B. Valuev, R.P. Gorlov, A.B. Kuzmin**  
**CHANGE OF POISONING SCHEMATIC HEAT REACTOR BY**  
**SAMARIUM AT VARYING REGIMES**

The paper discusses the poisoning of heat reactor by samarium basing on the point model. It considers regime of reaching by fresh reactor the designed power as well as transitional regimes from power to power. After reaching the equilibrium poisoning basic principles of defining of various characteristics of the given processes are formulated and their graphic solutions and calculated relations are presented.

UDC 621.384.6

**V.P. Kazmin, E.V. Semenyuk**  
**FORMATION OF MODULATED AZIMUTHALLY-PERIODIC**  
**MAGNETIC FIELDS OF CYCLIC ACCELERATORS**

Described are properties of azimuthally-periodic guiding magnet field of betatron with additionally set-up amplitude or frequency modulation. The peculiarities of forming such magnet fields by ridge-type poles are investigated. It is shown that the number of elements of periodicity of the guiding field is determined by a total number N of the ridges on each pole, by changing their azimuth position within the pole, and by a number Q of one-type ridges. Q should be divisible by N.

UDC 621.762:543.51

**V.A. Vlasov, D.V. Savostikov**  
**STUDYING OF DESORPTION OF GASES FROM DISPERSE**  
**POWDERS OF NON-ORGANIC MATERIALS BY MASS-**  
**SPECTROMETRY**

The paper presents the methods and results of studying the processes of desorption of gases from disperse materials on the base of Fe, Ni and complex metal oxides  $\text{CoO:Al}_2\text{O}_3\text{:ZnO:P}_2\text{O}_5$ ,  $\text{CoO:NiO:MnO}_2\text{:CeO}_2$ , by mass-spectrometry. Quality and quantity composition of the evolved gases are determined as well as the main forms of gas adsorption on the surface of ultra-fine powders.

UDC 621.184.3

**A.S. Zavorin, L.L. Liubimova, B.V. Lebedev,**  
**A.A. Makeev, A.A. Tashlykov**  
**X-RAYING OF ABNORMAL HEAT EXPANSION OF**  
**ENERGETIC STEEL**

Abnormality of heat extension and alternative changing of inner stresses accompanying structural heat transitions are shown by means of X-ray measurements of inner stresses in crystalline lattice of tube steel.

UDC 536.2:532/533; 532.516

**A.V. Krainov**  
**NUMERICAL ANALYSIS OF CONJUGATE HEAT AND MASS**  
**TRANSFER AND HYDRODYNAMICS FOR VISCOUS**  
**INCOMPRESSIBLE FLUID MOVING IN AN OPEN CAVITY**  
**UNDER CONDITIONS OF FORCED CONVECTION**

The numerical simulation of motion of viscous incompressible non-isothermal liquid in an opened cavity of rectangular type under conditions of forced convection and conjugate heat change. The hydrodynamic flow pattern of thick liquid in an opened cavern under conditions of forced convection in conjugate and non-conjugate statements is obtained. The temperature structures (profiles) for two phases - solid and liquid are obtained. Influence of model parameters on nature of motion is studied. Influence of model parameters on nature of temperature distribution in the both phases is shown.

UDC 66:62-7

**V.A. Shkirov**  
**HIGH-EFFECTIVE SEALS OF NEW GENERATION "GRAFLEX"**  
**SERIES, HEAT-EXPANDING, REFRACTORY MATERIALS OF**  
**"OGRAX" SERIES**

The paper presents characteristics of new advanced seals of "Graflex" series as well as refractory materials of "Ograx" series produced by "Unichimtek".

UDC 681.5.01

**P.G. Yakovenko**  
**METHOD OF CONTINUOUS MULTI-STEP SYNTHESIS OF**  
**OPTIMAL CONTROLS**

The presented method of sequential synthesis of optimal controls in linear and non-linear systems under limitation of coordinates is based on repeated numerical solutions of differential equations, methods of dynamic programming and imitative simulation, principles of "changing the target" and "leading weak element". The low of control, which is optimal on speed, is combined from the controls obtained for small steps during transitional process.

UDC 28.23.35

**V.A. Silich, M.P. Silich**  
**DESIGN OF A COMPLICATED SYSTEM ON THE BASE OF**  
**OBJECT-ORIENTED APPROACH**

The presented method for design of complicated systems allows to unite different methods of system analysis and engineering of knowledge on the base of a declarative model, based on objective paradigm of presentation of knowledge.

UDC 330.34:347.77

**G.A. Barysheva**

**SCIENCE AND TECHNOLOGY: METHODOLOGIC ASPECT**

The difference between knowledge and information, considered as a movement (transfer), resulted in differentiation of materiality, substantiality and subjectness. Science-consuming production has a substantial form, but the products of pure science can be the objects of economical appropriation, if they have material-subject form obtaining novelty and making difference from its predecessor. Only on getting specific material-substantial form the knowledge can become the object of owning and to be intellectual capital. Therefore the classification of scientific product based on the stages of movement to production or on ведомство belonging – is not effective.

UDC 336.71

**I.E. Nikulina**

**PECULIARITIES OF CREDIT MANAGEMENT  
AT THE PRESENT STAGE OF DEVELOPMENT OF THE  
REGIONAL BANKING SYSTEM**

The article is dedicated to the features of credit management of regional banking system on its modern development. The author focuses on the peculiarities of credit mechanism on regional level. The problems and the stages of its development are also emphasized. The prospects of credit mechanism development are offered by the author.

UDC 65.012.2

**S.L. Yeryomina**

**PECULIARITIES OF INTERNATIONAL FLOW OF CAPITAL  
UNDER MODERN CONDITIONS**

The article contains the analysis of factors and variants of foreign direct investment in current situation. The example of foreign direct investment in Tomsk city is also given in the article. This project anticipates involvement in the program of technical cooperation between the governments of Russia and Holland.

UDC 301.14

**V.P. Ploskonosova**

**SOVIET ETHACRATIE AND SOCIAL-ECONOMIC  
PECULIARITIES OF DYNAMICS OF INDUSTRIAL SOCIETY**

The events connected with generation, development and destroy of the Soviet system stated a call to not only fundamental principals of Marxism but also various non-marxist theories. Social-cultural processes ongoing in our country after historic turn in October 1917 oftentimes are considered as a result of dramatic casual circumstances, as an exception from the rules, as a sequence of tyranny of new governing elite, as a restoration of feudal basics, as a result of errors and myth-creation, as a sequence of national features. The conventional approaches are schematic and leave a wide discussion area. One of the most debated and key question is connected with understanding the nature of social, political and economical system existed in soviet period. The answer will generally define interpretation of social, economic and political processes in the country.

UDC 323

**S.O. Gavrilov**

**EVOLUTION OF INTERRELATIONS BETWEEN LOCAL  
SOVIETS AND PARTY ORGANS IN 1930S.**

The article is devoted to the debatable problem of interrelations of Soviet and Party organs of R.S.F.S.R. at the final stage of establishing the authoritarian political regime. The article deals with the forms and methods of the Party guidance over the Soviets in the 1930s. Special attention is paid to the most complicated problems of local representative bodies and their executive organs. The article contains specific information on the development and realization of and its territorial committees aimed at subordinating local governing organs to "the General Course" of the leading Party. The problem of repres-

sions of Soviet workers dealt with in the context of gradual bureaucratization of local representative organs. The author divides the Party guidance over the Soviets in the 1930s into periods. Thus, the problem of interrelations of Party and Soviet organs is considered in dynamics and development, characterized by constant transformations. Finally, the author draws conclusion of the complete fusion of executive bodies of soviets and territorial Party committees from 1939 to 1940.

UDC 342:347.7

**M.A. Suvorov**

**LEGAL PRINCIPLES OF TAX CHECKING**

The paper describes and analyses the basics of regional organization and effective performing of tax checkings. It also gives classifications of the checkings.

UDC 342.9

**S.V. Alekseev**

**THE ORGANISATIONAL AND LAWFUL PROBLEMS OF THE  
STATE CONTROL FOR THE COMMERCIAL ACTIVITY**

The paper describes specifics of administrative lawful relations, arising in the process of state control of entrepreneurial activity in the Russian Federation; the dynamic of development and possibilities to improve the mechanism of the state control in the field of the Russian commercial activity.

UDC 882Ж-95

**I.A. Aizikova, I.A. Matveenko**

**THE COMBINATION OF ORIGINAL AND FOREIGN PROSE  
IN TRANSLATION IN ZHUKOVSKY'S "SOBIRATEL"  
MAGAZINE**

The first investigation of Zhukovsky's prose published in "Sobiratel" magazine (1829, No. 1–2) includes the analysis of both his translations and original works (including the archive materials that have not been published before). The paper poses the question of analyzing such a combination as a way of expressing Zhukovsky's artistic mentality. The analysis helps to understand the peculiarities of Zhukovsky's latest prose as well as the literary processes in the early XIX century.

UDC 801.314.1

**Z.M. Bogoslovskaya**

**"VARIANT VOCABULAR DICTIONARY ..." AND ITS SOURCE  
STUDYING POTENTIAL**

The article discusses a new genre of the dialectical dictionary of the Russian language (created by the author of the article). The characteristics of "The Siberian dialects variant vocabulary dictionary" are given and its source studying potential is determined.

UDC 3308:796

**M.F. Vorogushin, G.L. Saksagansky, O.G. Filatov**  
**FROM SCIENCE – TO RADICAL TECHNICAL  
TRANSFORMATIONS: ELECTRO-PHYSICS AND  
TECHNOLOGIES OF XXI CENTURY**

The paper describes a half-century-long life of academician V.A. Gloukhikh – a graduate student of the Tomsk Polytechnic Institute. It presents the main stages of his fruitful scientific activity and achievements of his scientific school.

UDC 6223

**G.I. Kulakov, V.E. Mirenkov, L.B. Zvorygin**  
**SCIENTIFIC SCHOOL OF GEO-MECHANICS – THE KEY TO  
SUCCESS**

The paper describes scientific school of academician M.V. Kurlenya, who graduated from the Tomsk Polytechnic Institute in 1953.