

# Summaries

UDC 512.541

**Krylov P.A., Podberesina E.I.**  
**ABELIAN GROUPS AS ARTINIAN OR NOETHERIAN**  
**MODULES ABOVE ENDOMORPHISM RINGS. PART 2**

The A and B Abelian groups, such that the  $\text{Hom}(A, B)$  homomorphism group is the Artin module over the ring of the B group endomorphism, are described. Description of the A and B group for which the  $\text{Hom}(A, B)$  group is the Artin module over the ring of the A group endomorphism is reduced to the case when the A group has no torsion and the B group is either a quasi-cyclic group or a divisible group without torsion. The A and B Abelian groups for which the  $\text{Hom}(A, B)$  group is the Neter module over the  $E(A)$  or  $E(B)$  ring are characterized. The research of arbitrary Abelian group with the link Neter ring of endomorphisms is reduced to the research of the group without torsion with the link Neter ring of endomorphisms. The research of the right Neter ring of endomorphisms remained uncompleted. The separable Abelian groups without torsion with the link and right Neter rings of endomorphisms are described.

UDC 519.865

**Demin N.S., Rozhkova S.V., Tsytko A.V.**  
**APPLICATION OF THE MATHEMATICAL METHOD**  
**OF DYNAMICAL PROGRAMMING FOR SOLUTION**  
**OF A PROBLEM OF THE SECURITIES CASE MANAGEMENT**

Research of the problem of securities case formation, as problem of optimal management of case capital in the sense of minimization of functional characterizing its deviation from the etalon case capital is carried out on the basis of Bellman dynamical programming.

UDC 336.763

**Belsner O.A., Zhabin D.N.**  
**SWAPTION IN THE HULL-WHITE MODEL**

This paper analyses no-arbitrage interest rate term structure model presented by John Hull and Alan White in 1990. The model is widely spread and used in interest rate derivatives valuation at present. In the paper the possibility of its application in pricing of such over-the-counter financial instrument, as swaption is studied and analytical expression its valuation is developed. In this paper financial mathematic methods and elements of option theory were used. To find out if the derived expression is adequate market data a calibration results were used.

UDC 533.6.011

**Galckin V.M.**  
**ITERATION METHOD OF SOLUTION OF ONE-DIMENSIONAL**  
**DIVERGENT EQUATIONS OF GAS DYNAMICS**

The iteration method of solution of differential equations in divergent form describing one-dimensional stationary flow with transition over sound velocity is proposed. The method is based on using of a priori information about monotonous increase of a Mach number along a nozzle. Comparison with other methods is carried out on the exact solution as well as calculation of a two-phase flow.

UDC 553.411.071.242.4+550.4

**Kucherenko I.V.**  
**GEOCHEMICAL FEATURES OF NEAR-VEIN METASOMATISM**  
**IN QUARTZ DIORITES AND GRANODIORITES OF NUCLEATION-DOME**  
**FORMATION OF THE KEDROVSKOYE GOLD-ORE DEPOSIT (THE NORTH TRANSBAYCAL REGION). Part. 2.**  
**Near - vein metasomatic and geochemical halos**

The new geological-analytical data revealing distribution of gold and its geochemical satellites – silver and mercury – in magmatic rocks of the Kedrovskaya late-paleozoic nucleation-dome structure of the North Transbaycal Region which are identified as granodiorite and quartz diorite and holding poor gold veins in framing of large-volume metasomatic halos of the beresitovaya formation. Average contents of metal in rocks are calculated. Distribution of ore-genous elements in intravein space is submitted to mineralogical – petrochemical zoning of near-vein metasomatic halos and low enrichment of rear zone metasomatites with metals is corresponded with low gold content of quartz veins. The obtained results are discussed in comparison with published materials and evaluated as conforming the previous conclusions of author.

UDC 553.311

**Voroshilov V.G., Sanin V.N., Timkin T.V.**  
**ANOMALOUS GEOCHEMICAL FIELDS OF THE SULPHID**  
**MINERALIZATION ZONES OF THE MAYSKOE-LEBEDSKOE**  
**GOLD-ORE NODE**

Composition and zoning of metasomatites and ore of the gold ore node on joint of the structures of the Mountain Altai, Western Sayan and Mountain Shoria are researched. The polychronous character of anomalous geochemical field formation is shown, the mineralogical geochemical parameters of various facies of metasomatites and ores are defined, that allows to predict material filling of anomalous structures of geochemical fields in the limits of ore node.

UDC 550.8.05:004.8.032.26

**Gafurov D.O.**  
**GEOLOGICAL INTERPRETATION OF DATA**  
**OF THE TALAKANSKOYE OILGASCONDENSATE DEPOSIT**  
**GIS USING OF NEURON NETS CAPABLE TO TEACHING**  
**IN THE "NEUROINFORMGEO"**

The methods of interpretation of data of geophysical researches of bore holes with mathematical apparatus of neuron nets, capable to teaching, realized in the intellectual geoinformation system "NeuroIn-formGeo" are described..

UDC 551.482.212

**Savichev O.G., Bazanov V.A.**  
**CHEMICAL COMPOSITION OF BOTTOMSET BEDS**  
**OF THE VASJUGAN RIVER AND ITS INFLOWS**

Results of researches of a chemical composition of bottomset beds of the Vasjugan river and its inflows (the Tomsk oblast) are presented. The average (1997–2005) level of the contents of oil product

and more than 20 chemical elements is established. The interrelations between concentration of oil product and chloride-ion in bottomset beds and river waters are revealed. It is shown that bottomset beds of water currents on the average inside the Vasyugan river basin are characterized as moderately polluted and polluted.

UDC 574.632

**Vorobyov D.S.**  
**INFLUENCE OF OIL AND OIL PRODUCTS  
ON MACROZOOBENTHOS**

Data about influence of oil and oil products on bottom invertebrates are generalized. Influence of these pollutant on characteristics of bottom associations is considered, dependence of macrozoobenthos on qualitative composition of oil and oil products, their concentration and periodicity of pollution is reflected; the role of bottom organisms in processes of self-purification of water objects is discussed.

UDC 548:539.16.04

**Annenkov Yu.M.**  
**NATURE OF HIGH TEMPERATURE RADIATION ACCELERATED  
DIFFUSION IN ALKALINE HALOID CRYSTALS**

The theoretical analysis of radiation accelerated diffusion mechanisms at high temperature irradiation of alkaline haloid crystals is carried out. It is shown, that the radiation shaking mechanism and the divacancy mechanism give the most adequate description of the experimental results of acceleration of high temperature diffusion in alkaline-haloid crystals being exposed to intensive ionizing irradiation.

UDC 533.9

**Grigoriev A.N., Pavlenko A.V.**  
**INFLUENCE OF ENERGY INPUT VELOCITY (CIRCUIT  
INDUCTANCE) ON GENERATION OF BLAST WAVE AND  
OVERVOLTAGE PULSE AT ELECTRICAL EXPLOSION OF A FOIL**

An influence of energy input velocity (through change of circuit inductance) in the foil being exploded by electrical way on the shape (amplitude, front, duration) of the generated blast wave and overvoltage pulse is researched by experimental way. The physical ( $P_m \approx 1,17$  GPa) limit for pressure pulse increase is found – beginning from  $\sim 91$  nH the pressure pulse form remains constant. For the overvoltage pulse this law has not been found. The link between pulses of pressure and overvoltage is revealed.

UDC 621.039.55.001.4:621.3.014.6

**Babushkin Yu.V., Zimin V.P., Khomyakov E.A.**  
**THE SOFTWARE AND RESULTS OF SIMULATION  
OF THERMOIONIC SYSTEMS**

The structure of applied program package for research of thermoionic system characteristics is presented. The process of calculation of power-generating assembly consisting from three stages - preparatory, calculation and visualization of results - is described. Results of calculation of the anomalous characteristics of power-generating assemblies are given as illustration of applied program package possibilities.

UDC 539.125.5

**Lavrenyuck A.F., Selivanickova O.V.**  
**PRINCIPLES OF CONSTRUCTION OF NEURO-NET  
ALGORITHMS FOR SOLUTION OF NEUTRON TRANSFER  
PROBLEMS IN BREEDING MEDIUMS**

The features of use of neuro-net calculating structures for solution of neutron transfer problems in breeding mediums are considered. The principles of construction of neuro-net algorithms and schemes of neuro-net structures for this problem class on the basis of net-

radial models of neutron transfers and construction on their basis of neuro-net processors with net-radial structure are presented.

UDC 621.039.5

**Gavrilov P.M., Tsyganov A.A., Kokhomsky A.G., Chukanov V.B.,  
Antonenko M.V., Nesterov V.N., Shamanin I.V.**  
**POSSIBILITY TO USE THE "SCALE" APPLIED  
PROGRAM PACKAGE FOR NEUTRON PHYSICAL  
CALCULATIONS OF URANIUM GRAPHITE REACTORS**

The results of neutron-physical calculations of channel uranium-graphite reactors using the TRIFON, WIMS-D4, MCU-RFFI/A and SCALE programs are presented. The effects and the cases which are of the highest interest in physics and technique of nuclear reactors and defining degree of nuclear safety of plants during exploitation are considered. They included temperature effects of reactivity, effects of Xe poisoning and losses of heat carrier for cells with high enriched uranium; presence of discontinuity at various states of polycells; efficiency of a channel with high enriched uranium, effect of dehydration for various variance of polycell arrangement. The radial distribution of energy release in fuel elements in the case of its eccentric arrangement in a technological channel is defined. The comparative analysis of results obtained by various programs is carried out and conclusion about possibility to use the SCALE program as alternative applied program package for carrying out of theoretical neutron physical researches of channel uranium graphite reactors is made.

UDC 621.039.564.2

**Pavlyuck A.O., Tsyganov A.A., Kokhomsky A.G.,  
Khvostov V.I., Antonenko M.V., Kotlyarevsky S.G.,  
Boyko V.I., Shamanin I.V., Nesterov V.N.**  
**THE MEASURES FOR RADIOMETRY OF RADIATION FIELDS  
IN GRAPHITE LAYING OF SHUT DOWN INDUSTRIAL  
URANIUM-GRAPHITE REACTORS OF THE SIBERIAN GROUP  
OF CHEMICAL ENTERPRISES**

The content and course of works for evaluation of fissionable material quantity in the graphite layings of the shut down industrial uranium graphite reactors are presented. Constituent parts of calculated experimental methods for determination of fissionable material mass in the form of spillings and fuel fragments in graphite layings are given. The methods of sampling, and sounding of  $\gamma$ - and neutron radiation field parameters are considered. Description of equipment which is necessary to obtain distribution of  $\gamma$ - and neutron radiation in reactor laying is presented. Analysis of technical possibilities of obtaining of reliable experimental data of  $\gamma$ - and neutron radiation differential and integral parameters is given.

UDC 621.039.519

**Meshcheryakov V.N., Gavrilov P.M., Tsyganov A.A.,  
Kokhomsky A.G., Chukanov V.B., Antonenko M.V.,  
Shamanin I.V., Nesterov V.N.**  
**PROBLEM OF BENDING OF GRAPHITE LAYING COLUMNS  
OF THE АДЭ-4 AND АДЭ-5 URANIUM GRAPHITE  
REACTORS IN PROCESS OF EXPLOITATION BEYOND  
THE PROJECT SERVICE LIFE**

Analysis of experimental data of bending dynamics of engineered channels in graphite laying volume of the АДЭ-4 and АДЭ-5 industrial uranium-graphite reactors of the Siberian group of chemical enterprises is carried out. The review of technical solutions which allowed to ensure stabile exploitation of the layings over 20 years after completion of their project resources is presented. The procedure of calculated analysis of column stability is used and the discrete model of a laying is improved that allows to carry out comparative analysis of factors which affect column stability. Result of the work is decrease of laying bending down to the acceptable state using minimal necessary quantity of tensioning channels.

UDC 614.876;551.510.72

**Shura L.P., Karataev V.D., Kuznetsova E.G., Ardisson J., Barsi J. COMPARATIVE EVALUATION OF RADIONUCLIDES FALLOUT ON THE TERRITORY OF THE TOMSK DISTRICT (RUSSIA) AND THE MERCANTUR NATIONAL PARK (FRANCE)**

Comparative evaluation of surface radioactivity of the Tomsk district and the Mercantur National Park (France) soils caused by transuranium elements and  $^{137}\text{Cs}$  is carried out. The isotope ratios  $^{238}\text{Pu}/^{239,240}\text{Pu}$ ,  $^{239,240}\text{Pu}/^{137}\text{Cs}$  и  $^{241}\text{Am}/^{239,240}\text{Pu}$  are calculated by specific activity which allow to define the most probable sources of appearance of radionuclides in atmosphere. Results of the work are used for evaluation of radiation situation and defining of technogenous radioactivity sources on the examined territory. .

UDC 621.039.342+661.1+543.51

**Zaykov A.A., Zyryanov S.M., Pulnikov I.I., Skorynin G.M., Vlasov V.A.****DETERMINATION OF GAS ADMIXTURE CONTENT IN THE HIGH PURE ARSINE AT ITS CLEANING IN GAS CENTRIFUGES**

In process of study of possibility to use gas centrifuges for deep cleaning of arsine from admixture one detected toluene, xylol, and freon in the product to be clarified. It is found, that source of appearance of toluene, and freon are construction materials of gas centrifuges. Some characteristics of mass spectrometer analysis of the high pure matters on admixture content are researched on the example of toluene. The detection limit of admixture in a matter with corresponding preparation of the magnetic mass spectrometer may achieve  $\cdot 10^{-5}$  vol. %. Analysis error is up to 30 %.

UDC 661.87:519

**Filimonov S.V., Skorynin G.M., Orlov A.A., Goldobin D.N. SIMULATION OF NON-STATIONARY HYDRAULIC PROCESSES IN INDUSTRIAL CENTRIFUGE CASCADES OF URANIUM ENRICHMENT**

The mathematical model of non-stationary hydraulic processes in industrial centrifuge cascades of uranium enrichment is developed and realized. It is intended for application as the expert system in an automated system of control of engineered schema and using in computer simulator for training of separation production specialists.

UDC 661.87:519

**Orlov A.A., Koshelev S.M., Vandyshev V.I., Chernov L.G., Shopen G.V., Ilyin I.V., Gordienko V.S. MATHEMATICAL SIMULATION OF UF6 DESUBLIMATION PROCESS**

The mathematical model of process of uranium hexafluoride desublimation in the "48Y" and "48G" containers and tanks (the drawing No 322-06-0012) to optimize its engineering parameters and to decrease energy consumption is developed. It is found, that the parameters of uranium hexafluoride desublimation process calculated using the developed model are in good accordance with experimental data. It is shown, that basing on the developed model it is possible to create the system of automated control of engineering process of uranium hexafluoride desublimation.

UDC 66.023.2

**Tikhomirov I.A., Vidyayev D.G., Grinyuck A.A. A DIVIDED CASCADE FROM EXCHANGE ELEMENTS**

The differential equation of the cascade from divided elements is derived. Analysis of work of cascade in un-take off mode and in take-off mode showed that minimal flow for the cascade from elements coincides with the minimal flow for the cascade.

UDC 546.161,541.127/.127.4

**Karelin V.A., Kameneva O.V. FLUORIDE METHOD OF RUTILE CONCENTRATE PROCESSING**

The thermodynamic research of process of rutile concentrate fluoridation with element fluorine is carried out using the "ASTRA"

computer program. The kinetic features of the process are researched and treated by mathematical methods. The conditions of realizing of the processes in industrial equipment are discussed.

UDC 546.824-31,661.878

**Dyachenko A.N. THE FLUORINE AMMONIUM METHOD OF OBTAINING OF TITANIUM DIOXIDE**

The new method of obtaining of titanium dioxide from ilmenite is researched. The essence of the method is in decomposition of ilmenite by means of fluoride ammonium with following sublimation separation of titanium tetrafluoride and its hydrolysis to hydroxide and titanium dioxide. The apparatus scheme of technological division is proposed.

UDC 544.032

**Bin S.V., Borisova N.V., Surovoi E.P., Titov I.V. RELAXATION OF THE CURRENT IN NANOSIZE FILMS OF TUNGSTEN OXIDE (VI)**

In the range of external voltage equal 10 V irrespective of  $\text{WO}_3$  films thickness (20...100 nm), exposition time of samples in atmospheric conditions (2...180 hrs), substrate material (fluoroplastic 4, glass [GOST 9284-59]) the kinetic curves of Cu- $\text{WO}_3$ -Cu system relaxation current contain three part: sharp increase of current (an initial maximum), the part of current decrease and the stationary part, as well as storage of energy in the Cu- $\text{WO}_3$ -Cu systems is absent. The abnormal magnification of the stationary current is found at  $\text{WO}_3$  film thickness about 35 nm. Effect of a substrate material (glass, fluoroplastic 4) on kinetic law of relaxation current in the Cu- $\text{WO}_3$ -Cu systems is established. As result of post-processes relaxation of the Cu- $\text{WO}_3$ -Cu systems on glass carriers is terminated in 48 hrs, and on fluoroplastic carriers – in 180 hrs.

UDC 678.761.002.2

**Bondaletov V.G., Fiterer E.P., Bondaletova L.I., Novicov S.S. CATALYTIC METHODS OF OBTAINING OF OIL POLYMER RESINS**

Evaluation of obtaining of oil polymer resins by catalytic methods is presented. Possibility to use prospective narrow fractions which are formed at division of liquid products of pyrolysis for obtaining of oil polymer resins using the catalysts on the basis of complexes of  $\text{TiCl}_4$  with aluminium-organic compound is researched. Connection of realizing conditions of process with output and properties of synthesized resins is established.

UDC 665.7.038:547.313

**Nesyn G.V., Suleymanova Yu.V., Polyakova N.M., Filatov G.P. ANTITURBULENT ADDITIVE OF SUSPENSION TYPE ON THE BASIS OF HIGH  $\alpha$ -OLEFINE POLYMERS**

The law of behavior in the turbulent mode of flow of polymeric oil – soluble additive, which are used to increase output of oil pipe-line is analyzed, criteria of quality of anti-turbulent additives to oil are discussed, the laboratory technology of obtaining of the suspension type additives on the basis of high poly-  $\alpha$ -olefines is presented.

UDC 665.644

**Mikhaylova E.N., Kravtsov A.V., Ivanchina E.D., Melnik D.I. CONSTRUCTION OF NON-STATIONARY KINETIC MODEL OF DEHYDRATION PROCESS OF N-PARAFFINS TAKING INTO ACCOUNT COKE FORMATION ON THE CATALYST SURFACE**

The non-stationary mathematical model of the dehydration process of  $\text{C}_3$ - $\text{C}_{14}$  n-paraffins (Pacol-Difine) taking into account deactivation of a platinum containing catalyst as result of formation of carbonaceous depositions on its surface is developed. Its basis is formed by the experimental data of the industrial complex for production of linear alkyl benzole of the PA "Kirishineftorgsynthes". It is proposed to use the volume of processed raw materials as deactivation parameter. Influence of work duration and process rigidity on activity and selectivity of process is shown.

UDC 541.138

**Karbainov Yu.A., Puchkovskaya E.S.,  
Karbainova S.N., Slepchenko G.B.**  
**THEORETICAL SUBSTANTIATION OF POSSIBILITY OF THE  
VOLT-AMPERE MEASUREMENT METHOD FOR RESEARCH  
OF ADSORPTION OF SURFACE-ACTIVE ORGANIC MATTERS**

The volt ampere measurement method is proposed to research the adsorption process of surface active organic matters on solid and liquid electrodes. The boundary value problem for case when adsorbed compound is electrochemically active is solved. The methods of evaluation of various parameters of adsorption process are considered.

UDC 536.46

**Sabdenov K.O.**  
**THE BURNING MODES OF SOLID ROCKET FUEL WHICH IS  
DISINTEGRATED ON A GAS BY PYROLYSIS MECHANISM**

Non-stationary burning of solid rocket fuels and gun-powder is researched on the basis of the Denison-Baum model. It is shown, that the simplest kinetics of chemical reaction in gas phase allows to carry out description with the help of the model of wide spectrum of phenomena: auto-oscillations with one or more periods, break-down of burning and self-extinction.

UDC 536.46+662

**Knyazeva A.G., Nemytov V.P.**  
**NUMERICAL RESEARCH OF THE MODES OF GAS BURNING  
IN A POROUS CYLINDRICAL BURNER WITH LOW HEAT  
CONDUCTION OF A FRAME**

The simplest model of gas burning in a porous burner of cylindrical shape with low heat conduction of a frame is proposed. Basing on the model the numerical research of possible stationary modes of gas burning is carried out. The critical conditions dividing various burning modes being interesting from practical point of view are found. They are: the one with maximum of heat release in burner volume and the one with temperature maximum on the outer boundary. Transition from the one mode to another one can be realized at change both physical and geometrical parameters that is shown at detailed parametrical research.

UDC 539.121.8.04:621.9.047.7

**Sergeev V.P., Fedorischeva M.V., Sergeev O.V., Psakhie S.G.**  
**EFFECT OF 12H18N10T NANOCOMPOSITE COATINGS ON  
TRIBOLOGICAL PROPERTIES OF "38H3MFA STEEL – PA-66  
POLYAMID" METAL-POLYMER FRICTION PAIR**

Effect of nanocomposite coatings applied on the samples of the 38H3MFA high strength steel by means of the layer-on-layer magnetron deposition with ion beam treatment of every layer without substrate heating and the continuous magnetron deposition with substrate heating up to 565 K without ion beam treatment using the 12H18N10T steel target on microhardness and wear resistance at work in the friction pair with counter-body from polyamid-66 is researched. The nature of the tribological-mechanical properties change in dependence on methods and modes of coating applying and their subsequent treatment is defined. The interconnection of coatings properties with their structural-phase state is discussed on the basis of analysis of phase composition, average grain sizes, and lattice parameters.

UDC 537.624.7

**Goldstein A.E., Urazbekov E.I., Kornienko A.I.**  
**THE DEVICE OF HIGH PERFORMANCE DEMAGNETIZATION  
OF LONG-LENGTH CYLINDRICAL ARTICLES**

The device for high performance demagnetization of long-length articles is proposed. It is based on using of permanent magnetic field which is corrected according to the initial and residual article magnetizations measured during demagnetization. The constructive features of the demagnetization device are shown.

UDC 539.3;539.4.01;616.718

**Konvalenko Ig.S., Smolin A.Yu., Psakhie S.G., Karlov A.V.**  
**STUDY OF THE STRESSED-DEFORMED STATE OF A HUMAN  
FEMUR WITH AN ENDOPROSTHESIS ON THE BASIS OF  
DISCRETE APPROACH**

Refinement of two-dimensional numeric model of a human femur constructed previously on the basis of moving cellular automate method is carried out and its validity is shown. In particular, the new model takes into account specific character of the bone geometry – bending and changing of transversal dimensions along section in the frontal plane as well as influence of tractus iliotibialis tension on the stressed deformed state of the femur. It is shown that action of tractus iliotibialis has impact on distribution of shear stresses and stresses of all-round extension both in a natural bone and in the bone with endoprosthesis.

UDC 615.478:616-074

**Aristov A.A., Pecker Ya.S., Evtushenko G.S.**  
**APPLICATION OF THE METHOD OF PHOTOMEASUREMENT  
OF DROP BLOOD PROBE TO EVALUATE THE ERYTHROCYTE  
SETTING PROCESS**

Application of the method of photo measurement of a blood probe in form of laying drop to evaluate the erythrocyte setting process is considered. The theoretical substantiation and results of experimental study of using of proposed approach are presented. The efficiency of the method in terms of minimization of probe volume and reducing of analysis time is shown.

UDC 616.3

**Gyunter S.V., Votjakov V.F., Zhukov V.K., Dambaev G.T.**  
**THE DIAGNOSTIC COMPLEX OF OPTICAL ELECTRONIC  
SOUNDING USING INFRARED RADIATION**

The optical electronic diagnostic complex used for examination of the functional diseases of a gullet is proposed. The new method is based on sounding using infrared radiation. It is shown that the developed optical electronic diagnostic complex may be effective additional means at examination of peristaltic function of gastro - intestinal tract organs.

UDC 621.317.757

**Semyonov E.V.**  
**NONLINEAR REFLECTOMETRY USING BASEBAND PULSE  
TEST SIGNALS**

Results of experimental studies on sounding of transmission line containing linear and nonlinear discontinuities by video pulse signals are presented. It is shown that the used characteristic of signal transformation nonlinearity allows to discriminate character of discontinuities (linear or nonlinear) using video pulse test signals and to determine distance to nonlinear discontinuity.

UDC 621.375.026

**Titov A.A., Titova M.A.**  
**USING OF PROPERTIES OF THE CLOSED BIPOLAR  
TRANSISTOR IN BAND AMPLIFIERS AND MODULATORS**

It is shown, that a bipolar transistor with closed transitions is the limiter of signals with adjustment range about 40 dB. Possibilities to use the closed bipolar transistor properties to construct protection devices for band power amplifiers from overloadings and modulators of power signal amplitude are considered. The circuit of band amplifier with output power 100 W and work frequency band from 143 to 174 MHz keeping serviceability at delivery of input signal with power up to 80 W and changing of load resistance from short circuit to idling is presented. The circuit of amplitude modulator of periodic oscillations with power up to 50 W with the work frequency band from 200 to 240 MHz and field of output power adjustment from 0,04 to 46 W at modulation frequency up to 10 MHz is described.

UDC 621.375.018.756

**Tuev V.I., Khudyakov S.V.**  
**ELECTRONIC ADJUSTMENT OF VOLUME**  
**IN SOUND FREQUENCY AMPLIFIER**

The amplifier with electronic adjustment by on-line interface is described. The range of work frequencies of amplifier at unbalance of frequency characteristic 1 dB is from 30 Hz to 55 kHz; output power is 1,025 W; amplification coefficient on voltage is 20,5 dB; depth of amplification adjustment is 53 dB; maximal root-mean-square value of input signal is 2 V; signal/noise ratio at maximal volume is 65 dB; signal/background ratio is 95 dB.

UDC 621.313.12

**Nosov G.V.**  
**PULSE DELIVERY OF ACTIVE – INDUCTION LOAD**  
**BY ELECTRIC MACHINE GENERATORS**  
**WITH CHANGING INDUCTANCE**

Possibility to use electric machine generators with changing inductance for pulse delivery of active – induction load is shown. The formulas for calculation of changing inductance with account of saturation and non-symmetry of magnetic circuit of apparent pole generators of active type are presented. The work of generator at pulse parallel excitation is explained and results of generator model calculation are presented.

UDC 62-83:681.513.3

**Bubnov A.V., Katrich P.A.**  
**SIMULATION OF AN ELECTRIC DRIVE WITH PHASE**  
**SYNCHRONIZATION IN MATLAB–SIMULINK**

The computer model is developed and simulation of an electric drive with phase synchronization is carried out. The time dependences and phase images of electric drive work in transient conditions of works are obtained.

UDC 519.688

**Volkov Yu.V., Tartakovskiy V.A., Popov V.N., Botyguin I.A.**  
**RESEARCH OF NUMERICAL ALGORITHM**  
**OF THE "COMPRESSION – EXTENSION" OPERATION WHICH**  
**IS USED FOR RESTORATION OF BIOINDICATION DATA**

The way of restoration of signal phase based on numerical algorithm realizing the "compression-extension" operation used at isolation of bioindication information is considered. The results of numerical test of the proposed algorithm are presented.

UDC 004.415

**Sharopin K.A., Berestneva O.G., Ivaniv V.T.**  
**INFORMATION SYSTEM OF ESTIMATION OF PROFESSIONAL**  
**PSYCHOPHYSICAL READINESS OF UNIVERSITY STUDENTS**

Results of researches for simulation and evaluation of professional psychophysical readiness of high school students are presented. The structural model and information system developed on its basis which allows to carry out the annular inspections of functional state of students, to keep a date base including data about dynamics of physical, psychological and psychophysiological readiness as well as to present current and finite information in the form of representation being adequate to visual perception of a man and suitable for simple interpretation of obtained results are considered.

UDC 002.53:004.89

**Kozlov S.V., Tuzovsky A.F., Chirikov S.V., Yampolsky V.Z.**  
**USE OF ONTOLOGIES IN SYSTEMS OF ORGANISATION**  
**KNOWLEDGE MANAGEMENT**

The versions of use of ontologies as models of organization knowledge for solution of such problems of knowledge management as communication, integration and execution of logical conclusion are proposed. The approach to construction and work with ontologies in a system of knowledge management is explained.

UDC 378.1:657.22

**Dulson A.A.**  
**PROBLEMS OF MANAGEMENT ACCOUNT IN A HIGH SCHOOL**

Necessity of introduction of management account in a high school to increase efficiency of management solutions is substantiated. The main tasks which can and must be solved by management of a high school on the basis of management account data in particularly determination of specialist training cost, distribution of overhead expenses, minimization of taxes, estimation of department work efficiency, controlling of projects etc. are considered. To take the substantiated solution it is necessary in the each concrete high school to carry out researches of dependences of cost on numbers of educational groups and streams, direction of training and specialties and chair staff. The problems with which the high school leadership will collide in process of management account are discussed. The main problems are connected with complexity of structure and working processes of a high school, contradictoriness of the state position in relation to high school and conservative positions of the managers of the middle management level.

UDC 338.24.01

**Nikulina I.E., Lukov D.V., Mozgolin B.S.**  
**MODERN FEATURES OF PROGRAM AIM MANAGEMENT**  
**OF ORGANISATION**

The algorithm of execution and features of application and conditions of efficiency of program – aim approach to organization management is analyzed. The conclusion about prospects of development of such approach on the Russian enterprises is made.

UDC 330.52(075.8)

**Antonova Z.G.**  
**PARTNERSHIP OF A STATE AND A PRIVATE CORPORATIVE**  
**BUSINESS AS FACTOR OF STABLE EVOLUTION**  
**OF NATIONAL ECONOMICS**

The problems of economical growth in the modern conditions of Russia are considered. The named problems are connected with imperfectness of the tax system, law politics, general problems of national economics. The model of partnership of a state and a business expressing mechanism of agreement of economical interests of a private corporative business and a state is proposed in the frame of following reforming of national economics. The existing models of partnership of a state and a private corporative sector of economics are considered and advantages of this partnership for all agents are defined. The problems of realization of partnership conception for Russia on the modern stage are revealed.

UDC 334.012.62

**Trifonov V.A., Lobanov M.M.**  
**PROBLEMS OF INNOVATION DEVELOPMENT**  
**OF TOWN-FORMING ENTERPRISES IN CONDITIONS**  
**OF MONO-PROFILE TOWNS**

The problems of using of innovation potential of town-forming enterprises in conditions of monoprofile towns are considered. The features of development of innovation evolution strategy of town-forming enterprises are described. The methodological basis of creation of system of innovation evolution management is presented.

UDC 111.1:159.953

**Tsybulevskaya E.A.**  
**THE SOCIETY OF TRANSITIONAL TYPE AS PHENOMENON.**  
**CHARACTERISTICS OF SOCIAL TRANSITIVITY**

The principles and basing of functioning of society of the transition type are analyzed, characteristics of social transitivity are presented, the essence of transitional period dynamics are considered.

UDC 17

**Ardashkin I.B.**  
**WHETHER IS POSSIBLE ONTOLOGY OF A PROBLEM?**

The capability of existence of the problem ontology is considered. It is proved, that the problem finds own ontology in conditions of a

subjective reality, that allows to remove the subject – objective relations in cognition.

UDC 159.9

**Kholodnaya M.A., Berestneva O.G., Muratova E.A.**  
**ONTOLOGICAL BASIS OF CONTROLLING BEHAVIOR**

The ontological basis of the controlling behavior phenomenon in difficult living situations is researched. Its correspondence to the three announced styles – productive copying, social copying and non-productive copying – is evaluated on the basis of analysis of the construct validity of the Junior copying scale. The psychic mechanism laying in the basis of choice of controlling method by tested ones is revealed with the help of cluster analysis. The ontological basis of controlling behavior in the frames of the content model proposed by authors is pr?cised.

UDC 130.2:101.1:316.7

**Dementyeva S.V.**  
**REMINESCENT DOMINANTS OF CULTURE:  
PHILOSOPHIC ANALYSIS**

The variance of philosophic analysis of reminiscence role in social memory of a society is presented, the main direction of following philosophic discourse are defined. Study of theoretical cognitive value of reminiscences as gnosiological category of philosophy in its new epistemological status and revealing of the basic method of memory ontology are the most important ones among them by author opinion. The proposed reminiscence analysis of the concrete works of culture allows to restore the original idea of author from the one side and to reveal all variety of intercultural links appearing both in processes of creation of cultural work and in its following beings from the other side.

UDC 378.4:371.3:82.09(075.8)

**Pesotskaya S.A.**  
**THE INFORMATION – COMMUNICATIVE APPROACH TO  
TEACHING IN A HIGH SCHOOL AS TIME REQUEST  
(ON THE MATERIAL OF THE "MODERN FOREIGN  
LITERATURE" COURSE)**

The essence of the information – communicative approach to teaching and possibility to use it in the "Modern foreign literature" course on the level of building of course concept, search of way of organization of seminar studies and independent work of students, and form of lecture material presentation is discussed. The communicative potential of this educational discipline is revealed. Originality of functioning of the "Teacher – Student" continuum is shown. Necessity of approbation of new form of works with students, interaction of communicative approach elements on the all main levels of information transmission, prospects of using of the method to increase the student motivation to studying of the subject are accented.

UDC 821(091)

**Myshkina A.F.**  
**SOURCES OF ARTISTIC – PHILOSOPHIC THINKING IN NATIONAL LITERATURES OF THE VOLGA AND URAL REGIONS**

The literature of the Volga and Ural region peoples – Chuvash, Mari, Bashkir, Tatar, Mordvinian, and Komi – on the stage of their co-

ming-to-be is analyzed. The main ways of formation of an artistic-aesthetic consciousness and an artistic-philosophic thinking in the national artistic literature are defined. The importance of the verbal people works for origin and following development of professional artistic-philosophic thought is revealed.

UDC 501:372.8

**Shepel O.M., Minin M.G.**  
**ENTROPY – SYNERGY APPROACH TO TEACHING  
OF NATURALLY – SCIENTIFIC DISCIPLINES**

Possibility to consider knowledge as living system being capable to absorb information, to isolate information sources and to reproduce it by transmitting to another consciousness is shown. Analogies between natural scientific values and information exchange parameters are established. The possibility of development of entropy – synergy scanning as new direction in development of teaching methodology is substantiated.

UDC 802.0:378.147

**Maletina L.V., Matveenco I.A., Sipilova N.Yu.**  
**EDUCATION ON ANOTHER LANGUAGE  
IN A NON-LANGUAGE INSTITUTE – DEVELOPMENT,  
PROBLEMS, AND PROSPECTS**

Problems, evolution and modern trends of education on another language in a non-language institute, and the foreign experience of teaching to language for special aims and technology of teaching of the Tomsk polytechnic university students to professional foreign language are discussed.

UDC 930.2

**Galanova R.A.**  
**110 YEARS OF THE TPU – 100 YEARS OF THE FIRST ISSUES  
OF SIBERIAN ENGINEERS**

The article is devoted to the 110<sup>th</sup> anniversary of the founding of the Tomsk Polytechnic University, the 100<sup>th</sup> anniversary of the first issue of Siberian engineers and role of polytechnicians in scientific, economic and culture development of the Siberia.

UDC 001.6

**Boyko V.I., Koshelev F.P., Selivanikova O.V.**  
**40 YEARS OF PREPARATION OF SPECIALISTS  
FOR ATOMIC ENERGETICS**

The article is devoted to the 40<sup>th</sup> anniversary of the "Physical-energetic plants (PEP)" chair of the physical technical faculty of the Tomsk polytechnic university. Problems of formation and development of the PEP chair are discussed.