РЕЗЮМЕ/ABSTRACTS

Ostrikov O. M. Mesoscopic Dislocation Model of Developing Wedge Twin

Based on dislocation mesoscopic model the relations for calculating stress fields for developing wedge twin are obtained. Based on the relations data the variants of evolution of a stressed state of the developing wedge twin are considered in the conditions of the absence and the presence of the process of twinning dislocations generation.

Kiseliev M. G., Drozdov A. V., Gabetz V. L., Stolarov A. A. Experimental Study of the Influence of Ultrasonic Vibrations Imparted to a Knurl Roll on the Process of Pressing-In the Abrasive Grain into Metal Surface

The paper deals with the experimental study of the influence of ultrasonic vibrations imparted to a knurl roll on the process of pressing-in abrasive grains in metal surface of the specimen when introducing them perpendicular to this surface. The description of an experimental unit made is presented enabling to practice the process of abrasive grain pressing-in in usual conditions of a roll rolling as well as when imparting it ultrasonic vibrations with various amplitudes of vibration displacement. Main principles of the procedure of conducting the study are stated. Comparative study data is presented reflecting the influence of ultrasonic vibrations on the process of pressing- in the abrasive grain into metal surface of a specimen. Based on its analysis it is established that under the action of ultrasound the process of abrasive grain breaking is intensified with simultaneous increase of grain reduction rate. In this connection the probability of embedding and charging hard particles formed into metal surface increases. When the amplitude of ultrasonic vibrations imparted to the knurl roll increases grain reduction rate also increases with increasing probability of charging the surface of specimen with hard particles. From practical point of view the data obtained can be used for improving the technology of charging the surfaces of various tools based on the process of pressing into them abrasive (diamond) grains with knurl roll.

Loustenkov M. E., Proudnikov A. P. Structural Reserves of Increasing Efficiency of Gearing with Intermediate Solids of Revolution

The problems of reducing power losses in gearing with intermediate solids of revolution are considered. The designs of roller gears in which solids of revolution contact cams by means of bearings are presented. The designs of gears with roller axial and radial motion and the problems of structural analysis of the mechanisms of this type are considered.

Andrianov D. N., Novikov M. N., Stolarov A. I. Numerical Simulation of Steel Flow Motion in Intermediate Ladle

The process of melt blow with inert gas in the intermediate ladle with porous gas blower components is studied using the method of mathematical simulating. Their influence on the arrangement of melt flows and vortex formation during rapid casting is analyzed.

Timoshin E. S., Timoshin S. I. Polarization of the Sea of Strange Quarks in Nucleon

The method of direct measurements of the polarization of the sea of strange quarks in inclusive semi-inclusive and lepton-nucleon deep inelastic scattering processes is proposed.

Serenkova I. A., Pankov A. A., Tsytrinov A. V. Determining the Spin of Kaluza-Klein Graviton Resonances in the Process of the Production of Electron and Photon Pairs at the Large Hadron Collider in the ATLAS Experiment

The prospects of experimental discovery of heavy graviton resonances in the decay into electron-positron and photon pairs in the Randall-Sundrum model with extra spatial dimensions are analyzed. The method of identification of the spin of graviton first excitation state is proposed. The method is based on the analysis of characteristic angular distributions of elec-

trons and photons being the products of graviton decay. Discovery and identification riches of gravitons in the ATLAS experiment at the Large Hadron Collider are determined.

Grountovich N. V., Gorunova Y. O. Development and Analysis of Electric Power Consumption Balance of Boiler Houses of Gomel Region

Qualitative assessment of electric equipment installed at the boiler houses of Gomel region is conducted. Electric power consumption balances for boiler houses using natural gas as fuel are developed. The analysis of yearly electric balances is conducted. Data obtained enables to state that at the given moment main using equipment are supply line pumps, smoke exhausters and fans.

To reduce fuel and electric power consumption rate for heat power supply it is proposed to replace existing pump equipment with the equipment operating on thyratron-inductor motors. It is especially important for boiler houses with heat productivity to 20 Gcal/hr since it is impossible to change heating mains length.

Us A. G., Konovalov A. I. On Some Aspects of Increasing Efficiency of Energy Saving Measures

Matrix decomposition of consumption system by axes of fuel and energy resource consumption and lines (reserves) of saving is proposed within the frames of system approach to the solution of the problem of energy saving to define most profoundly the measures on improving energy efficiency. Databases are developed for energy saving measures and rates of consumption of fuel and energy resources for Gomel region in accordance with classifier offered by the Department of energy efficiency. Energy saving measures are classified by four groups. Databases on energy saving measures and fuel and energy consumption rates can be successfully used to solve a wide range of problems when controlling energy use.

Moroz D. R., Balyco D. S., Shenetz E. L. The Evaluation of Electric Power Losses in Enterprise Distribution Network

The method of defining electric power losses in the enterprise distribution network is proposed based on the distribution of enterprise total power between using electric equipment proportionate to their installed capacity . A program has been developed enabling to provide verification of the method of determining electric power losses using Monte-Carlo testing method. After verification it was revealed that the method proposed features systematic methodic error amounting to 25 %.

The expression allowing for this error in computation of electric power loss in distribution network of the enterprise is proposed.

Komnatny D. V. Calculation of Electrostatic Induction in Control and Measurement System Cases due to Attending Personnel Spurious Electrization

The problem of development and application of a versatile method of electrostatic inductance analysis with reference to electromagnetic compatibility analysis is stated and solved. Specifically electromagnetic induction in the units of control and information systems occurring due to spurious electrization of attending personnel is studied. It is proposed to calculate induced charges by reduction of integral equations for these charges to algebraic ones by the use of boundary elements method and solving them by Nekrasov iteration method. It is shown that this way of the problem solving is analogous to Stoletov's rule for electrostatic induction problem solving. Numerical experiment data shows that the method of calculation ensures minimizing the number of calculation errors and the solutions are obtained with small error which is reduced with the increase of boundary element lattice density.

Kolesnik Y. N., Kouznetsov M. N., Savochkina V. V. Multifactor Evaluation of Distribution Transformer Performance in the Conditions of Electric Power Price Growth

In connection with appearing of a wide range of distribution transformers the evaluation of their performance is conducted with taking into account various technical and economic factors. It is shown that the selection and replacement of the transformers with specified characteristics can be considered an energy saving variant at the stage of shop transformer substations designing and reconstructing.

Khabibullin D. A., Todarev V. V. Methods of Determining the Parameters of Electromagnetic Fields of Mains Frequency Set Up by 0,4 kV Distribution Device

Check computation of magnetic component of electromagnetic field of mains frequency in the rooms adjacent to the source being the distribution device of 0,4 kV is presented. Allowing for electromagnetic processes as quasi-stationary phenomena enabled to simplify the methods of computation reducing them to an engineering procedure.

Karpenko E. M., Kazimirsky Y. L. Organizational-Economic Mechanism of Controlling Innovation Cycle of Creating Novel Potato-Harvesting Equipment

Speaking about potato growing as one of the most important branches of farming in the Republic of Belarus it should be mentioned that not all the problems of planning the process of new machines development and creation are completely solved so far. The problem of reducing innovation cycle, intending the processes of developing up-to-date equipment for a particular consumer, improving consumption properties of novel machines, organizational support of innovation development and production processes are insufficiently studied yet.

Designing and applying novel equipment for potato growing in farming is an objective, continuing and developing process which covers the activity of research as well as production divisions. Determining major disadvantages of organizational-economic mechanism of developing and applying novel equipment for potato growing the authors propose main lines of improving organizational and economic aspects of this complex process. Controlling designing and applying novel equipment for potato growing within an integral complex is a stable, multilink and multistage system of social-economic and organizational-technical relations aimed at reducing the whole cycle from the origination of scientific ideas to their implementation and practical application.

Kayukova O. S., Drozd S. S. Direct Foreign Investments as the Indicator of Investment Appeal of the Republic of Belarus

The study conducted enables to make a conclusion that during transition periods the factors of economic growth are not only the amount and the structure of capital invested but also an efficient entrepreneur sector. In this connection liberalization of economic relations is considered to be the condition for efficient use of investments. At the same time the measures taken aimed at this problem have not had a positive influence on foreign investments inflow which makes evident the necessity of developing a new concept of business performance.

Yevdokimov S. I. Forecasting Economic Development of Regions Based on the Theory of Kondratiev Major Cycles (Pskov Region Taken as an Example)

Reflection of Kondratiev major cycles in economic development of Pskov region is analyzed. General forecast of further economic development of the region is done. It is suggested to take the branches of the fifth (post-industrial) cycle which can fundamentally change the structure of economy as the strategy of the region development.