ABSTRACTS

Anishchenko N.V., Artemenko D.A.

SYNTHESIS OF INFEED SERVO ELECTRODRIVE FOR COMBINED CONTROL.

A mathematical model and flow diagram of servo electrodrive with the combined control is offered. Designing of the drive is got up for different modes of working.

Index terms – **electrical drive, correcting device, combined control, flow diagram, speed, position**.

Geljarovskaja O.A., Lupikov V.S.

ANALYSIS OF METHODS USED FOR COMPUTATION OF MAGNETIC FIELDS IN THE SPATIAL CONTOUR WITH CURRENT.

Numerical modeling of an external magnetic field in the spatial contour with a current are resulted. Estimations of the field for two variants of the contour breakdown according to the magnetic moments method on simple contours with different planes are received. The researches results are recommended to be considered at use of the magnetic moments method for the magnetic field analysis in contours with currents which have a complicated spatial configuration.

Index terms – **spatial contour, external magnetic field, magnetic moments method, numerical modeling**.

Grischuk Ju.S., Vishnevski A.Je.

MICROCONTROLLERS LABORATORY STANDS FOR RESEARCHES OF ELECTRICAL APPARATUS.

Review and analyses of laboratory stands are got up in view of revealing their application to currying out tests and researches of electrical apparatus. Analyses of different types of modern microcontrollers and their using in control systems of electrical apparatus resulted.

Index terms – **electrical apparatus, tests, researches, laboratory stand.**

Korol E.G.

ESTIMATION OF THE MAXIMUM MAGNETIC FIELD IN AUTOMATIC SWITCHES.

Analytical ratios for determination of a maximum of an external mag-

netic field produced by currents in automatic switches are offered. An analysis of the magnetic field maximum levels near to the automatic switches surface is carried out. Estimations of the field are received for automatic switches of the A3700 series taking into account their rated currents values. Discrepancy of separate automatic switches of the series to requirements of electromagnetic compatibility standards in particular of the magnetic fields of power frequency is established.

Index terms – **automatic switches, external magnetic field, power frequency, electromagnetic compatibility.**

Kuznetsov B.I., Nikitina T.B., Voloshko A.V., Byaklin Moxamed Ali.

STOCHASTIC DIGITAL ROBUST CONTROL SYNTHESIS BY THE VERTICAL ELECTRIC DRIVE.

A method of stochastic digital robust control synthesis for the vertical electric drive with elastic elements as discrete-continual plant is developed. An example and dynamic characteristics for the system is given.

Index terms – **discrete-continual plant, electric drive, stochastic digital robust control**.

Kuznetsov B.I., Nikitina T.B., Churlo O.V., Kobilyanskij B.B.

DYNAMIC CHARACTERISTICS OF ANALOG AND DIGITAL ROBUST CONTROL SYSTEMS FOR A WINDING MACHINE.

The article deals with the problem of analog and digital robust control system for winding machines with elastic elements viewing as three-masses systems. There is an example of the analog and digital robust control for the winding machine electric drive.

Index terms - **winding machine, analog and digital robust control.**

Leonov V.A., Goncharova E.Je.

INCREASE OF TECHNICAL AND ECONOMIC INDICATORS IN THE CENTRALIZED HEAT SUPPLY SYSTEM.

The choice of the heat schedule for heating essentially influences predicted expenses of the heat-carrier in thermal networks, their throughput and electric power expenses on their heat-carrier pumping. In the paper researches of the temperature mode in the Kharkov apartment house are resulted; actions that are expedient for increasing of technical and economic indicators of the heat supply central systems are developed.

Index terms - **centralized heat supply system, heat schedule**, **technical and economic indicators.**

Litvinenko V.V., Lupikov V.S., Sereda A.G.

QUALITATIVE ANALYSIS OF THE FERROMAGNETIC CORE INFLUENCE ON FORCE VALUE IN THE ELECTROMAGNET OF AN INDUCTION-DYNAMIC DRIVE.

Theoretical and experimental researches of ferromagnetic core influence on the electrodynamics value in the electromagnet of a induction-dynamic drive are resulted. Recommendations improving the induction-dynamic drive design are offered for the high-speed automatic switches.

Index terms – **automatic switches, induction-dynamic drive, electromagnet, ferromagnetic core, electrodynamics force.**

Litvinenko D.G.

TO THE PROBLEM OF CURRENT PARAMETERS CHOICE IN THE PI-REGULATOR BY USING DIAGRAMS OF DRIVE QUALITY CONTROL.

In the paper the method of adjusting current parameters in the PI-regulator of an electrical drive is described in view of improving the quality control in its speed contour under given condition of stability in the current contour. Computation, quantitative estimation of parametrical sensitivity and dynamic characteristics in the non-standard adjusted current contour are resulted.

Index terms – **electrical drive, current PI-regulator, quality control, parametric sensitivity.**

Lupikov V.S., Lelyuk N.A., Korol E.G., Litvinenko V.V., Varshamova I.S., Bolukh V.F.

REVIEW OF SUPERFAST COOLING METHODS USED FOR SMALL OBJECTS.

Known methods and devices used for superfast cooling of biological cells is resulted. Features and lacks of these methods and devices are noted. Possibilities of numerical modeling of superfast cooling processes in cells of biological objects are shown.

Index terms – **electrical contacts, biocells, small object, cooling, superfast cooling, cryogenic oscillating heat-pipe**.

Lupikov V.S., Bolukh V.F., Krjukova N.V., Geliarovskaja O.A.

METHOD OF SMALL OBJECT COOLING BY CLOSED-END

OSCILLATING HEAT-PIPE.

An analysis of a known method used for cooling of the central processor of the thermal pad in the desktop PC central processor is carried out. The main feature of the method is use of an independent cooling module in the form of a closed-end oscillating heat-pipe. This module essentially improves thermal characteristic in comparison with a traditional thermal tube.

Index terms – **electrical contacts, desktop PC, small object, cooling, closed-end oscillating heat-pipe.**

Lu Chan, Chernyshov N.N., Rastripa Je.Je., Shevchenko M.S., Ditiatkin V.I., Dukarev V.V., Mejlakh I.K., Prasol A.Je., Zjukin D.S.

MOVEMENT OF CHARGED PARTICLES IN CROSSED ELECTROMAGNETIC FIELDS.

Questions of movement of electronic streams in static electric and magnetic fields and their managements in accelerators are considered. In the paper problems of charged particles movement are considered, the non-uniform axially symmetric fields and movement of an electron in the combined and crossed fields are described. For definition of the particle movement trajectory in the field its magnetic induction spatial distribution is considered.

Index terms – **charged particle, electronic streams, non-uniform axially symmetric fields**.

Moroz A.N.

ANALYTICAL ANALYSIS OF SENSITIVENESS IN THE CYLINDRICAL PIEZOELECTRIC SENSOR USED IN TECHNOLOGICAL PROCESSES BASED ON ACOUSTIC VIBRATIONS IN THE WATER ENVIRONMENT.

The established fluctuations of a piezoelectric cylinder with radial type of its polarization, used in the piezoelectric sensor are researches for definition of its optimum parameters at which its sensitivity reaches the maximum values in the given frequency diapason.

Index terms – **piezoelectric sensor, piezoceramic cylinder, sensitiveness.**

Mostovoj S.P.

FIELD RESEARCHES IN THE VICINITY OF A PULSE

SEISMIC RADIATOR WITH CONVERTER OF INDUCKTION-DYNAMIC TYPE.

In the paper experimental researches of a seismic field in the vicinity of a pulse seismic radiator with electromechanical energy converter of induction-dynamic type in the form of a jammed flat membrane are resulted.

Index terms – **pulse seismic radiator, converter, induction-dynamic type, seismic field.**

Ovcharov S.V., Ostrovskiy A.V., Kurashkin S.F.

ANALYSIS OF AN ASYNCHRONOUS MOTOR MODE OF OPERATION UPON WIRES OVERLAPPING IN THE OPEN-WIRE ELECTRICAL TRANSMISSION LINE.

In the paper an analysis of an asynchronous motor mode of operation upon wires overlapping in the open-wire electrical transmission line is resulted .

Index terms – **asynchronous motor, open-wire electrical transmission line, wires overlapping.**

Pridubkov P.Ja., Khomenko I.V.

TO THE PROBLEM OF SPATIAL DISTRIBUTING OF THE STATIONARY ELECTRIC FIELD INTENSITY IN VOLUME METALLIC PARTS OF AN ELECTRICAL EQUIPMENT.

Stationary electric field in conducting environments is investigated. It is shown, that the Maxwell postulate can be applied to its description. Using of the vector potential allowed to pass to the Poisson equation and obtained its solving by the Green theorem. Analytical dependence of the field intensity vector from the environment electric properties and spatial distribution of its current density vector are set up.

Index terms – **electrical equipment, metallic parts, stationary electric field, vector potential, field intensity.**

Safonov A.N., Panteliat N.G., Rudenko E.K, Shulgenko N.G.

NON-STATIONARY ELECTROMAGNETIC FIELD IN GROOVING WEDGES JOINTS OF ROTOR IN THE TGV-300 TURBOGENERATOR.

The FEM analysis of three-dimensional non-stationary electromagnetic fields in fragments of synchronous turbo generator and power equipment is described. Computation of the eddy currents density module, additional losses from the currents and its magnetic field induction in grooving wedges joints of rotor in the TGV-300 turbo generator are resulted.

Index terms – **turbo generator, eddy currents, electromagnetic field, FEM, computation.**

Sebko V.V., Verba A.Ju.

ELECTROMAGNETIC THREE-PARAMETRICAL CONTROL OF PARAMETERS IN PEANUT RAW MATERIALS.

Possibility of applying of transformer electromagnetic gauges theory to control of electric and temperature parameters in samples of peanut raw materials is investigated.

Index terms – **electromagnetic gauges, theory, parameters, control.**

Stepanenko A.A.

METHOD FOR COMPUTATION OF THE DISK ELECTRODYNAMIC DRIVE.

A design procedure for an electrodynamic drive of disk type without current-carrying and magnetic elements of its case is resulted on the basis of the diffusion theory of a magnetic field in current-carrying sheet. Experimental checking of the received results is spent.

Index terms – **electrodynamic drive, disk, computation, magnetic field, diffusion theory.**

Khudyaev A.A., Mishenuk A.I.

ESTIMATION OF PRECISION OF ITERATIV TYPE THREE-CHANNEL SERVOSYSTEMS BY RANDOM INPUTS.

The mathematical model is given, and comparative probability estimation of precision of the iterative type three-channel servosystem with account additive noise and different standard tuning of dynamics of the autonomous control channels of electric drives is analysed.

Index terms – **iterative type three-channel servosystem, control channel, forming parameter, error dispersion, index of precision raise.**