ABSTRACTS

ELECTRICAL APPARATUS

Boljukh V.F,

EFFICIENCY OF AN INDUCTIVE-DYNAMIC DEVICE AT ITS "PUSHING AWAY-BRAKING" RUNNING CYCLE.

Pushing away and braking processes in the core of inductive-dynamic device are analyzed at their following during of one running cycle. The core height and speed decrease are determined as functions of capacitor store parameters and distance between core and inductor of the device.

Index terms – **inductive-dynamic device, pushing away and braking processes, analyses.**

Danko V.G., Goncharov Je.V.

HEAT LEACKING DETERMINATION IN A CRYOSTAT OF THE Superconducting FAULT CURRENT LIMITER.

A heat leakage in cryostat of the fault current limiter with a superconducting winding is considered in the article. A technique for computation of thermal emissions in the cryostat is offered.

Index terms – **fault current limiter, superconducting, heat leakage**.

Dubovenko K.V.

INFLUENCE OF PLASMA LOAD PARAMETERS ON ELECTRICAL DISCHARGE CHARACTERISTICS IN THE CIRCUIT WITH INDUCTIVE ENERGY STORE.

Numerical simulation of air plasma characteristics in a high power electrical discharge occurred in the circuit with inductive energy store and electrically exploding opening switch is carried out using magneto hydrodynamic approach. Influence of nonlinear parameters in the plasma active-inductive load (straw inductance, plasma channel length) is determined on the transient characteristics.

Index terms – **circuit with inductive energy store, electrical discharge, magneto hydrodynamic approach, characteristics, numerical simulation.**

Lupikov V.S., Varshamova I.S., Geljarovskaja O.A., Krjukova N.V., Poliakov I.V., Savshenko K.A., Piljugina O.Ju., Rudas Ju.D.

MAGNETIC FIELD MODELING IN THE AUTOMATIC SWITCH WITH TRANSPOSED CONDUCTORS.

A technique of external magnetic field modeling in the three-phase

electric equipment is developed. By results of modeling recommendations concerning transposition of switchboards conductors before terminals of a three-phase automatic switch are proposed to satisfy requirements of ecological safety in electric substations.

Index terms – **automatic switch, phases current conductors, transposition, magnetic field.**

Litvinenko V.V., Sokol Je.I., Lupikov V.S., Boljukh V. F, Boljukh E.G., Krjukova N.V., Katkov I.I.

INCREASE OF SPEED IN ELECTRIC DEVICES OF PROTECTION USING OF CRYOGENIC COOLING.

Experimental researches of an induction-dynamic drive with cryogenic cooling by liquid nitrogen are resulted in a disk core of its electromagnet . Prospects of such cooling in switching electric devices are proved in view of energy-saving and increasing their working out speed.

Index terms – **electric devices of protection, automatic switch, induction-dynamic drive, electromagnet, cryogenic cooling, liquid nitrogen.**

Shwedchikova I.A., Zemzjulin M.A.

ESTIMATION OF DESIGN PARAMETERS IN A DISK MAGNETIC SEPARATOR.

The problem about movement of the ferromagnetic particle taken in a working zone of a magnetic separator from a stream of a loose material is considered. The estimation of geometrical parameters in the new disk magnetic separator design is received.

Index terms – **disk magnetic separator, working zone, ferromagnetic particle, movement problem.**

ELECTRICAL MACHINES

Galajko L.P., Gajevskaja N.J.

SIZE OPTIMIZATION IN THE SWITCHED-RELUCTANCE INDUCTION MOTOR PRETENDED FOR MINER ELECTRIC LOCOMOTIVES.

Computations of a switched reluctance motor pretended for miner electric locomotives are resulted using of the orthogonal central-composite plan (OCCP) of the second order and method of multi criterion optimization taking into account weight factors. Electromagnetic computations are carried out and the optimum construction of the motor is chosen.

Index terms – **switched-reluctance induction motor, power substations, magnetic field, compensation, parametrical systems.**

Galajko L.P., Pipich M.V.

TEMPERATURE COMPUTATION OF STATOR WINDINGS IN DC MOTOR BY THE FINITE ELEMENTS METHOD.

In the paper computation of the temperature field in stator windings of DC motor intended for the rotating furnace of 630 kW are resulted using the final elements method realized in FEMM 4.2. Comparison of the results by final elements method and classical one are got up.

Index terms – **DC motor, stator windings, temperature, computation, final elements method.**

Zablodsky N. N., Plyugin V.E., Lukyanov N.V.

INFLUENCE OF MECHANICAL STRESS ON MAGNETIC AND ELECTRIC PROPERTIES IN A THE HOLLOW FERROMAGNETIC ROTOR OF A MULTIFUNCTIONAL ELECTROMECHANICAL CONVERTER.

Main states of a technique that accounts influence of internal stress on electromagnetic parameters and characteristics in a screw multifunctional electromechanical converter are presented. Characteristic zones of the stress influence are defined in active parts of the converter.

Index terms – **multifunctional electromechanical converter, hollow ferromagnetic rotor, internal stress, characteristic zones.**

STRONG ELECTRIC AND MAGNETIC FIELDS

Gnatov A.V., Argun Sch.V., Chaplygin Je.A., Drobinin A.M.

EXPERIMENTAL RESEARCHES OF TRANSIENTS IN DISCHARGE CONTOUR OF A MAGNETIC PULSE UNIT.

Transients in a discharge contour of a magnetic pulse unit are researched experimentally and resulted in the paper. Influence of processes in parallel branches of the discharge contour on a current impulse characteristics is investigated. The unit work is analyzed for as branched so not branched schemes.

Index terms – **magnetic pulse unit, discharge contour, transients, experimental researches.**

Zolotariov V.M., Antonec T.Ju., Schebenjuk L.A.

TO DEFINITION OF LOSSES IN METAL PROTECTIVE ELEMENTS OF HIGH-VOLTAGE CABLES WITH CROSS-LYNKED POLYETYLEN.

The analysis of results of computations of losses in electrowire screens and metal plastic covers of power cables by 220 kV with the sewed polyethylene isolation is made.

Index terms – **power cables, screens, covers, losses**.

Rezinkin O.L., Goncharenko S.V.

STAND FOR RESEARCH OF FERROELECTRIC MATERIAL CHARACTERISTICS IN PULSE ELECTRIC FIELDS.

The experimental stand intended for research of ferroelectric materials in pulse electric fields is developed. The stand allows to carry out research the test sample material induction dependence from electric field intensity at voltage of 1 to 20 kV and temperature of 20 to 150 °C.

Index terms – **pulse electric field, ferroelectric material, dynamics characteristics, experimental research, stand.**

ELECTROTECHNOLOGIES USEGE

Akimov L.V., Vishneveckiy K.O., Vishneveckiy Je.O.

POLYNOMIAL TECHNIQUE OF SYNTHESIS OF AC ELECTRIC DRIVE WITH A TWO-MASS MECHANICAL PART AND VECTOR CONTROL.

Technique of designing of AC drive systems with static and astatic speed control are proposed based model of two-mass mechanical object with vector control. Synthesis of these speed regulators is resulted using standard Butterworth polynomials. Transient processes in different operation modes of the AC drive are analyzed.

Index terms – **electric drive, synthesis, polynomial technique.**

Akimov L.V., Litvinenko D.G.

SYNTHESIS AND MDU CRITERION OPTIMIZATION OF VECTOR CONTROL SYSTEM FOR ASYNCHRONOUS ELECTRIC DRIVE WITH SPEED FEEDBACK OF A MECHANISM.

Technique of designing of astatic speed regulation system with vector control are resulted for the AC asynchronous electric drive. The technique realized a complex approach to optimization of frequency-regulated drives as two-mass mechanical unit included an independent voltage inverter.

Index terms – **asynchronous electric drive, vector control system, speed feedback, parametrical optimization, synthesis.**

Kuznetsov B.I., Nikitina T.B., Bovduj I.V., Voloshko A.V., Vinichenko E.V.

EXPERIMENTAL RESEARCH OF ROLLING MILLS MAIN DRIVES WITH RELATED THROUGH THE ROLLED METAL ON TWO-MASS ELECTROMECHANICS SYSTEM STAND.

The method of experimental research of rolling mills main drives with related through the rolled metal as a two-mass electromechanics system for the short line and as a three-mass electromechanics system for the long line on two-mass electromechanics system stand are developed. The example of experimental dynamic characteristics for such system is given.

Index terms – **experimental research, rolling mills, main drives, two-mass electromechanics system stand.**

Kuzmichov I.K.

APPLICATION OF HORN RADIATORS FOR TIME EXCITATION OF OSCILLATIONS IN RESONATORS.

Coherent excitation of oscillations in resonators is realized using of horn ray radiators with the diffraction grating.

Index terms – **horn radiator, resonator, time excitation, reflection coefficient.**

Kundenko N.P., Lupikov V.S.

COMPUTATION OF THE OSCILLATORY SPEED IN A CRYO-PRESERVING ENVIRONMENT.

Analytical parities for computation of oscillatory speed and superfluous pressure, resulting diffractions of an acoustic wave on biological object are received characterizing the cryo-preserving environment.

Index terms – **biological object, acoustic wave, diffractions, modeling.**

Poedinchuk A.Je.

ANALYSIS OF PULSE REFLECTOMETER CHARACTERISTICS AT INTENDED FOR MEASURING OF BIOOBJECTS DIELECTRIC PERMEABILITY.

The analysis of picosecond volt impulses shapers made on tunnel diodes is carried out.

Index terms – **pulse reflektrometr, permittivity, tunnel diode, duration of the pulse front.**

DEVICES AND METHODS OF NOT DESTROYING CONTROL

Gorkunov B.M., Tjupa I.V., Tischenko A.A., Scopenko V.V., Levchenko V.G.

DECISION-MAKING IN PROBLEMS OF THE NOT DESTROYING ELECTROMAGNETIC CONTROL.

Methods for estimation of parameters reliability in objects of electromagnetic not destroying control are offered taking into account regular and casual errors of computation and measurement signals in eddycurrent converter. It is shown, that the approach is applicable for defectology problems, depth control in strengthened layers and quality of welded connections.

Index terms – **electromagnetic not destroying control**, **parameters, estimation.**

INFORMATION

Chernyshov N.N., Frolov A.V., Shcherbak E.L.

DEPENDENCE OF NUCLEAR PROCESSES SPEED FROM ATOM EXCITATION.

Theoretical possibilities of realization in the future of cold nuclear synthesis are considered in the paper. Various classes of atom radio-activity are considered. The analysis of the weak power processes which are taking place in the physics, astrophysics and technologies of nuclear waste processing is carried out. The great value of nuclea properties change in the ionised atom is noted.

Index terms – **technologies of nuclear waste processing, radio-activity, analysis.**