

ABSTRACTS

- Adamova S.V.* 3
ANALYSIS OF PULSE ELECTROMAGNETIC FIELDS INTERACTION WITH WRECKERS OF FRUIT CROPS.
The integral equation for computation of biological objects electromagnetic field is proposed.
Index terms – **pulse electromagnetic field, integral equation, biological objects, influence.**
- Anishchenko N.V., Astapov A.A.* 9
MATHEMATICAL MODEL OF THE MONOPHASE CONDENSER ASYNCHRONOUS ELECTRIC MOTOR.
A mathematical model and a diagram of the monophasе condenser asynchronous electric motor are developed using a method of *longitudinal* and transversal fields components (the method of two reactions). The model adequacy is tested by a computer modeling on the base of the MATLAB package.
Index terms – **monophasе asynchronous motor, mathematical model, method of two reactions, condenser.**
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SYNTHESIS OF A NONLINEAR CONTROL METHOD FOR POSITIONING OF PRESS SCREWS IN THE AUTOMATIC SYSTEM OF ROLLING THICKNESS REGULATION WITH THE ACCOUNT OF ITS BACKLASHES.
Synthesis of a nonlinear control method for positioning of press screws in the automatic system of rolling thickness regulation is executed by its feedback linearization. The initial nonlinear system are transformed to linear one by the Lie algebra. A synthesis of an optimum linear regulator is fulfilled. Dynamic characteristics of the synthesized system are resulted.
Index terms – **automatic system of rolling thickness regulation, optimum linear regulator, Lie algebra.**
- Vydrja A.V., Gontar J.G., Guryн A.G., Jarmak O.N.* 25
APPLICATION OF THE ELECTROMECHANICAL ANALOGY METHOD IN SEISMIC FLUCTUATIONS FOR ACCOUNT OF PARAMETERS IN PRESSURE IMPULSE PRODUCED BY ELECTRODYNAMIC SUPERFICIAL RADIATOR.
Opportunity of constructing a model for definition falling from a

ground surface and reflecting pressure impulse from a researched petroliferous layer is considered in the clause using methods of electro-mechanical and direct analogies.

Index terms – **petroleum sphere, an electro-dynamics superficial radiator, settlement model, a pressure impulse.**

Grishchuk Ju.S., Vishnevskiy A.E.

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THE REVIEW AND ANALYSIS OF RELEASERS IN AUTOMATIC SWITCHES.

A review and an analysis of releasers designs in automatic switches are made. The basic lacks of existing designs are considered and ways of improvement of technical and economic characteristics in the releasers are defined.

Index terms – **circuit breaker, testing, control system.**

Galaiko L.P.

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FORMING OF THE MECHANICAL CHARACTERISTIC IN SWITCH-RELUCTANT MOTOR INTENDED FOR THE MINER ELECTRIC LOCOMOTIVE.

The method of a mechanical characteristic forming in a switch-reluctant motor intended for the miner electric locomotive is considered in close taking into account requirements to its technical and economic indexes. Simulations for the 27 kW motor are resulted using of the SIMULINK program and recommendations for using the method are given.

Index terms – **switch-reluctant motor, mechanical characteristic, simulation.**

Kozorezov A.E., Egorov B.A.

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INCREASING OF WORKING MAGNETIC STREAM UNDER THE MAIN POLE OF THE 4Π280 DC MOTOR UNDER MAXIMUM LOADING BY REDUCTION OF SATIATION IN SEPARATE AREAS OF ITS MAGNETIC SYSTEM.

A problem of magnetic designing of DC motors is analyzed for so-called "limiting motors" in which it aggravate due to obtaining improved power indexes in its given limiting dimension. The problem is discussed in the paper.

Index terms – **DC motor, magnetic system, satiation, designing.**

Kuznetsov B.I., Voloshko A.V., Bovdyj I.V., Vinichenko E.V.

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MATHEMATICAL MODEL OF THE MAIN DRIVES OF

ROLLING MILLS TAKING INTO ACCOUNT THEIR INTERRELATION THROUGH THE ROLLED METAL AS ROBUST CONTROL SYSTEM OBJECT.

Mathematical models of main drives of flattening mills are developed in two forms: as a two-mass electromechanical system for the short line and as a three-mass one for the long line, taking into account the resilient elements in transmissions boundary path by executive motors, reducing gears and rental felling and taking into account the friction nonlinear moments between felling by the mutual influencing of rental rollers on each other through the rolled metal.

Index terms – **rolling mills, main drives, robust control.**

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

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DIGITAL ROBUST CONTROL SYNTHESIS BY THE HORIZONTAL ELECTRIC DRIVE.

The method of digital robust control synthesis by the horizontal electric drive with elastic elements as discrete-continual object is developed. An example of dynamic characteristics for such system is given.

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

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

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DIGITAL ROBUST CONTROL IN MECHANISMS OF WINDING MOTORS.

This article deals with the digital robust control problem for winding motors with elastic elements in view of three-mass system. An example of dynamic characteristics of the synthesized system is resulted.

Index terms – **winding motor, digital robust control.**

Maleev A.M., Egorov B.A.

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PROBLEMS OF COOLING IMPROVEMENT IN EXTREMELY LOADED MOTORS OF THE 4П280 SERIES BY COMBINING OF COMPULSORY VENTILATION AND SPECIAL DESIGN OF THEIR BEARINGS SHIELDS.

A problem of electric motors cooling is analyzed for so-called "limiting motors" in which it aggravate due to obtaining improved power indexes in its given limiting dimension.

Index terms – **electric motor, cooling, bearings shield, compulsory ventilation.**

Monahov D.K., Sereda A.G.

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**EFFECTIVE USING OF ELECTRODYNAMIC EFFORTS
IN CIRCUIT BREAKERS CONTACT SYSTEMS.**

A modernization efficiency of a immobile contact-holder in the VA51-39 circuit breaker is grounded. The modernization allows decreasing the breakaway current in a mobile contact. The method of high accuracy computation of electrodynamic's efforts between parallel conductors is proposed and realised.

Index terms – **circuit breaker, electrodynamic's efforts, breakaway current, computation.**

Moroz A.N.

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**FORMULATION OF THE BOUNDARY VALUE
PROBLEM AT COMPUTATION OF THE CYLINDRICAL
PIEZOELECTRIC GAUGE INTENDED FOR MEASURING
OF ACOUSTIC PARAMETERS IN THE LIQUID SOUND
FIELD.**

The decision of the boundary value problem in the obvious form for an acoustic wave in a liquid and formulas for computation of parameters in the piezoelectric gauge intended for measuring of the wave characteristics are resulted.

Index terms – **liquid sound field, boundary value problem, piezoelectric gauge, acoustic parameters, piezoelectric gauge, computation.**

Muntjan V.A.

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**PROSPECTS OF HYDRODYNAMIC EMITTERS USING
FOR CREATIONS OF ACOUSTIC AND ULTRASONIC
VIBRATIONS IN PROCESSES OF WOOL WASHING.**

An analysis of acoustic and ultrasonic fluctuations using in technological processes and hydrodynamic radiators constructions are resulty and the expediency and advantages hydrodynamic radiators is proved at a wool washing.

Index terms – **akustic and ultrasonic vibrations, hydrodynamic emitter, washing of wool.**

Nikitina T.B., Bovdyj I.V., Voloshko A.V., Vinichenko E.V.

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**ROBUST CONTROL IN AN IMITATION STAND OF A
TWO-MASS ELECTROMECHANICAL SYSTEM.**

The article deals with the mathematical model of robust control for an imitation stand of a two-mass electromechanical system. An example of dynamic characteristics for the system is given.

Index terms – **imitation stand, two-mass electromechanical**

system, robust control.

Ovcharov S.V.

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RESEARCH OF ACTIVE CAPACITY LOSSES AND ISOLATION RESOURCE IN QUASISTEADY MODE OF OPERATING OF THE POWER TRANSFORMER.

The technique for determination of active power losses and expense of resource of isolation of power transformer in quasi-steady state is proposed in the paper.

Index terms – **power transformer, active capacity losses, isolation resource.**

Ovcharov V.V., Ovcharov S.V., Teljuta R.V., Judina O.V.

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RESEARCH OF ACTIVE CAPACITY LOSSES IN FUNCTION OF SLIDING IN AN ASYNCHRONOUS ELECTRIC MOTOR.

The technique for determination of active power losses in an asynchronous electric motor is proposed in the article.

Index terms – **asynchronous electric motor, sliding, active power losses.**

Rezinkina M.M., Grinchenko V.S., Rezinkina K.O.

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COMPUTATIONAL CHOICE OF PARAMETERS IN BAND SCREENS.

Computational analysis of shielding characteristics in band screens on their main parameters (thickness, width and continuity) are performed. parameters of band shields that provide optimal shielding factors at minimum of metal volume of the screens are found.

Index terms – **band screen, parameters, computational choice.**

Sedova E.A.

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REVIEW OF QUALITY MONITORING AND MEASUREMENT OF RESISTANCE IN ELECTRIC CONTACTS UNDER CURRENT.

Analysis of schemes for measuring of resistance in contacts of electric devices under current are resulted. Prospects of the quality monitoring are formulated.

Index terms – **electric contacts, resistance, quality monitoring, measuring, prospects.**

Sorokin M.S.

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MATHEMATICAL MODELLING OF INTERACTION OF

ELECTROMAGNETIC IMPULSES WITH SPERM OF ANIMALS.

Influence of electromagnetic impulses in the millimeter range on sperm of animals is investigated in view of increasing their impregnating after cryocondensation.

Index terms – **electromagnetic impulses, sperm of animals, interaction, mathematical modelling.**