

ABSTRACTS

Theoretical electrical engineering and electrophysics

SHIDLOVSKA N.A., KRAVCHENKO O.P., SAMOILENKO V.G. (Kyiv)

Investigation of processes in nonlinear cyclic circuits by Bogoljubov's averaging method

The work analyses discharged RLC-circuits, in which all three elements are in turn considered as nonlinear, using Bogoljubov's averaging method. Correlations, describing processes in the aforesaid circuits, are obtained by means of Bogoljubov's averaging method.

BARANOV M.I. (Kharkiv)

Basic descriptions of probabilistic distribution of free electrons in a conductor with an electric conduction current

Quantum mechanical stochastic correlations for approximate analytical computation of longitudinal distribution of density of containment probability, finding probability and free electrons density at "hot" and "cold" areas of a thin metallic conductor with constant or variable electric conduction current are obtained.

ZHUIKOV V.Ya., ROZVADOVSKY A.F. (Kyiv)

A near-field region of power supply lines in a system of data communications

Expressions for determination of electric and magnetic fields strength, created by RLC systems in a near-field region, are obtained. Computation and measurements of distribution of current and a radiation field of a double-line segment, which is used for indoors data communication, is made. The obtained results can be used for construction of a wire-wireless local computer network, in which electric wires are not only data communications medium, but also signals emitters/receivers.

ZAGIRNJAK M.V., BRANSPIZ Yu.A. (Kremenchug)

To a computation of plane-parallel open electromagnetic systems

Possibility of computation of plane-parallel magnetic fields of open electromagnetic systems by limitation of rated operating conditions by a square, for which an exterior is conformally represented at the interior of the other square with identical boundary conditions, is shown.

ASSUIROV D.A. (Kharkiv)

Control of an external magnetic field of technical objects with surface-distributed sources of a control field in a closed system

Principles of an external magnetic field control of technical objects with surface-distributed magnetic executive bodies in a closed system, based on application of scalar magnetic potentials in the prescribed points of a technical object surface as guided co-ordinates of a system, are given.

Conversion of electric energy parameters

ZHARSKY B.K., GOLUBJEV V.V., NOVSKY V.O. (Kyiv)

A modified rule of multiplication of Fourier series

Modified formulas for determination of Fourier series coefficients, which are equal to a product of two initial Fourier series, their derivation and examples of application, are proposed.

BILOKHA D.O. (Kharkiv)

Method of a reactive current meter construction for a fast-acting thyristor jack

The problems of construction of a reactive current component meter of the fundamental harmonic for a control system of a thyristor jack of reactive power are considered. The main attention is paid at achievement of maximum speed at acceptable accuracy in the conditions of high harmonics presence in a spectrum of a monitored current using digital filtration with a zero phase shift.

Electromechanical energy conversion

ARKHIPOV A.V., KONDRATENKO I.P., RASCHEPKIN A.P. (Kyiv)

Dynamic braking of a single-sided linear machine with constant magnets

Methods of electromagnetic processes analysis in a single-sided linear machine with constant magnets and an arbitrary number of pole pairs are elaborated. Functional dependences of power co-operation on a structural implementation of the machine are determined. A computation method of a dynamic braking process for different implementations of a combined tire is elaborated.

Electric power systems and installations

STOGNIY B.S., SOPEL M.F., TUTIK V.L.,
PANOV A.V., USCHAPOVSKY K.V. (Kyiv)

Analysis of typical circuits of microprocessor devices connection in a station network by IEC 61850 standard

Short comparison of circuits of local station networks construction is given for organization of information exchange between microprocessor devices in accordance with the standard IEC 61850. Introduction of new technologies by this standard will contribute to creation of modern systems of power objects automatic control.

RJABENKIY V.M., DJAKONOV A.S.,
GOLOBORODKO A.N. (Nikolajev)

Research of an air current transformer operation in a short circuit mode

Operation of an air current transformer (belt of Rogowski) in a short circuit mode is considered. It is shown that a model with lumped parameters and a model with distributed parameters are equivalent in this mode. It is proved that self-capacity of a current transformer does not affect a transmission function of a transformer.

BOGDANOVA O.V., IVANKOV V.F., SHAFIR
Yu.N. (Zapor'zhzhja)

Description of complex models for computation of an electric field of transformers with application of unified elements, relative and symbol co-ordinates

Description of unified structure of electrodes, insulation for complex models forming at computation

of an electric field in the edge and the middle of transformers windings and electric reactors with application of relative and symbol coordinates is given. A numerical preprocessor for data preparation for an electric field computation program by the method of integral equations is elaborated.

Information measuring systems in power engineering

TARANOV S.G., MAZMANJAN R.O. (Kyiv)

A gyrator in SPICE - models of galvanomagnetic Hall generators

Methods and facilities of new SPICE - macromodels of galvanomagnetic generators thynthesis based on the fundamental theory of Hall effect are considered in the article. Descriptions of some macromodels, implemented by equivalent circuits with gyrators and quadripoles, results of their testing, methods of experimental determination and formulas of models parameters computation, are given.

LEVITSKY A.S., BALJASCHUK L.I. (Kyiv)

Calculation of condensers capacity with coplanar electrodes

Analytical expressions and diagrams for computation of coplanar condensers capacity, which electrodes are the systems of parallel band, circular concentric, sector and spiral bars, are obtained.