ABSTRACTS
Theoretical electrical engineering and electrophysics

BARANOV M.I. (Kharkiv) **Strong and weak streaming free electron scattering in metallic conductor with electric conduction current.** The physical conditions determining the strong and weak free electron scattering by metal lattice points in round thin metallic conductor with axial electric conduction current of various amplitude-time parameters are established

ZHUIKOV V.Y., ROMASHKO V.Y., VERBYTSKY Y.V. (Kyiv) **Numerically-analytical method of free mode functions calculation.** The numerically-analytical method of free mode functions calculation is considered and the analytic formula for their calculation is given in the article. The algorithm of calculation of free mode functions is developed. The comparison of the effectiveness of this algorithm and the numerical methods of calculation are drawn

STADNIK I.P., FILLIPOV D.M. P. (Simferopol) **Integral equation method for calculation of eddy currents in the moving extensive ferromagnetic conductors illustrated on the linear asynchronous electric motor**. The derivation of the system of integral equations concerning density of eddy currents and microcurrents in case of location of extensive ferromagnetic conductors in the way that some of them perform linear and steady motion in the sinusoidal plane-parallel magnetic field is given in the article. The linear asynchronous electric motor is taken as an example to illustrate the method

BELINSKY V.V., BOZHKO I.V., CHARNY D.V. (Kyiv) **Pulse corona discharge on conducting liquid surface and its use for water treatment.** The characteristics of pulse corona discharge flowing under air-pressure within the range "multipin anode – planar target covered with conducting liquid" are analysed. In the article it is shown that the transition from DC voltage to impulse voltage allows multiple increase of the current amplitude and length of the positive streamer. The study of chemical efficiency of this discharge by water treatment allows to make some conclusions about the effectiveness of use of such pulse corona discharge

Conversion of electric energy parameters

PERESADA S.M., BOVKUNOVYCH V.S., KOVBASA S.N. (Kyiv) **Matsuse adaptive observer: new synthesis, guaranteeing the asymptotic nature of evaluation of flux linkage vector and rotor active resistance of asynchronous motor.** The synthetic method adaptive to variations of rotor active resistance of flux linkage vector observer having the structure of Matsuse adaptive observer is developed. The structure of observer feedbacks and correlation for tuning coefficients guaranteeing local asymptomic stability of evaluation of flux linkage vector and rotor active resistance on condition that the electromagnetic moment is nonzero or module of flux linkage vector is not constant.

MYCHALSKY V.M. (Kyiv) **Overmodulation mode in the process of controlling of autonomous voltage inverter with pulse-width modulation.** The methods of measurement of harmonic composition of output voltage in the overmodulaton mode with application of various modulation strategies for PWM are considered in the article

Electromechanical energy conversion

ZOLOTARIOV V.M. (Kharkiv), SHCHERBA A.A., PODOLTSEV A.D. (Kyiv) **Modelling of dynamic processes in electromechanical system for the control of superhigh-voltage cable movement in slant extrusion-type line**. The modelling based on Matlab/Simulink/SimPowerSystems package of the electromechanical system consisting of three electric drives on the basis of asynchronous motors for the control of superhigh-voltage cable movement in slant extrusion-type line is carried out. The harmonization of electromechanical parameters for two system drives and the evaluation of the allowed supply voltage fall by cable critical mass are performed.

VYHOVSKY O.V. (Kyiv) **Assessment of defects impact in a stator mandrel and winding of turbogenerator on maximum temperatures and showings of termocontrol regular system.** The mathematical model and the results of calculation of the temperature field and showings of regular sensors in a stator mandrel and winding of turbogenerator with the power of 1000MV involving termodefects are given. The influence of termodefects in a stator mandrel and winding on showings of termocontrol regular system is analysed

Electric power systems and installations

KYRYLENKO O.V., PAVLOVSKY V.V., LUKIANENKO L.M., ZORIN Y.V. (Kyiv) **Analysis of voltage rating of power systems.** The definition of voltage rating and the most common for power systems in Europe methods of its analysis are considered in the article. Among them are the following: the methods of QV-, PV-curves and VQ –sensitivity. It is shown that these methods enable to define "weak" buses in the power system and measure the critical voltage value.

Information-measuring systems in power engineering

BRAHYNETS I.A., ZAITSEV E.A. (Kyiv) **Noise resistance of phase laser vibration sensors**. The possibility of frequency range extension of the vibration sensor up to 1000Hz is considered. The structural model of measurement with the analysed random error is offered. The algorithm of adaptive compensation of harmonic interferences is described. The experimental results of the device model are given.

To the 40th anniversary of the STC of Magnetism of Technical Objects of the NAS of Ukraine

ROSOV V.Yu. (Kharkov) **To the 40th anniversary of the Science and Technology Center of Magnetism of Technical Objects of the NAS of Ukraine**. History, achievements, perspectives. Summarized history and achievements of the Science and Technology Center of Magnetism of Technical Objects of the NAS of Ukraine in the period of 1970-2010.