Main Subject Categories

Theoretical Electrical Engineering and Electrophysics

The theory of electrical circuits and electromagnetic fields
Analytical and numerical-analytical methods of calculation of linear and non-linear electrical circuits and electromagnetic field in different environments
Mathematical modelling of electromagnetic continuous and pulsed acceleration processes
Analysis and synthesis of electrical and magnetic circuits, electromagnetic fields
Electrophysical processes and phenomena, their influence on technical objects and environment

Conversion of Electric Energy Parameters

Main types of functional conversions of electric energy parameters
Methods of electric signal modulation
Circuit and algorithmic solutions of rectifiers, transistor and thyristor inverters, frequency converters, reactive power compensators.
Pulse converters and DC regulators, methods and techniques for AC voltage control
Energy supply systems of electrotechnical complexes
Power electronics, diagnostic and control systems of converters
Modelling, calculation and development of converters of electric energy parameters
Electromagnetic compatibility of converters with the consumer and supply network

Electromechanical Energy Conversion

Physical processes and phenomena in electrical machines

Modelling, research, optimization of electrical machines and electromechanical energy converters
Development, designing of asynchronous, synchronous electrical machines and DC electrical machines
Turbo- and hydrogenerators – operation conditions, reliability and operation efficiency
Special electrical machines and systems – linear
Transformers and autotransformers
Adjustable electrical drive and control systems
Stand-alone power supply systems of stationary and moving objects
Monitoring of operation condition of electromechanical equipment

Electric Power Systems and Installation Complexes

Electrotechnical and electric energy equipment
Devices and systems of operating parameters control, flexible system, protection and automation systems
Operating conditions of power systems, electrical networks and power supply systems
Power systems control
Modelling of electric energy objects and systems
Diagnosis of electrotechnical and electric energy equipment, protection and automation systems
Decision support systems and training systems of operating personnel
Electric energy quality, electromagnetic compatibility

Information Measuring Systems in Electric Power Engineering

Information technologies, information measuring devices and systems, information-and-control systems
Methods, equipment and measuring systems of electrical and magnetic values, energy accounting.

Problems of metrology and measurement assurance of electrically and magnetically measuring instruments, energy accounting devices.
Automated metrological installations for control of measuring devices of electric energy parameters
Sensitivity, accuracy, noise resistance of measuring devices and systems
Modelling of processes in measuring systems
Algorithms and circuitry of measuring signals processing, measuring converters and measuring data processing
Impedancemetry
Multiphase calibrators of alternating currents and voltages, value standards in electric power engineering