24th *International Forum of Young Scientists*
"RADIO ELECTRONICS AND YOUTH IN THE XXI CENTURY"
Information Message

Kharkov National University of Radio Electronics (KNURE, Ukraine) invites students, post-graduates and young scientists to take part in the work of the 24th International Forum of Young Scientists "RADIO ELECTRONICS AND YOUTH IN THE XXI CENTURY" which will be held on **April, 7 – 9, 2020.**

12 thematic conferences will be held in the framework of the Forum (Application 3).

Working languages of the Forum are Ukrainian, Russian, English.

Publication of the **Proceedings** is planned before the opening of the Forum.

TO PARTICIPATE IN THE WORK OF THE FORUM one should present the following documents in the electronic form (E-mail:mref21@nure.ua):

- Electronic version of abstracts of the report formed in accordance with the requirements and the applied example (Appendix 1);
- An application with indication of the scientific direction and the section of the Forum (Appendix 2).
- **DEADLINE FOR CAMERA-READY PAPER SUBISSION**: **– February, 21, 2020.**
- The authors of the abstracts accepted by the Organizing Committee will be informed about the bank requisites for transfer of the organizing fee till **March, 15, 2019** in the Second Information Message.
- Abstracts of the reports failing to meet the requirements will not be accepted.
- The Forum is held on the basis of self-financing at the expense of the participants.
- **The organizing fee** for participation is **10$** for foreign citizens and includes publication of the program, Proceedings of the Forum and the expenditures connected with meeting the expenses for the Forum organization and holding.
- The Proceedings of the Forum will include abstracts of the reports accepted by the Organizing Committee.
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SUBMISSION GUIDELINES

- The volume of abstracts: **2 full pages** of **A4** size paper, Microsoft World text editor
- Margins: **25 mm**.
- The text should be typed **1** spaced: size **14, Times New Roman**.
- Summary in English (8 - 10 lines)
- List of references (up to 5 sources)
- Formulae, symbols, variables in the text should be typed as the Microsoft Equation objects.
- Figures and tables should be clear, compact. Redactors: CorelDraw, Table Editor, Microsoft Excel.
- Texts of the reports are printed in author's version without editing

The order of the material arrangement:

TITLE OF THE REPOR (capital letters, bold, in the middle of the line).

The next line – the author's name, initials (small letters, in the middle of the line).

The next line – the appointment, scientific degree, name, initials of the scientific supervisor (small letters, in the middle of the line).

The next line – the complete title of the organization (small letters, in the middle of the line).

The next line – the mail address, telephone number, e-mail.

The next line – the abstract in English (up to 8 - 10 lines)

The text of the abstracts should be printed in an interval.

EXAMPLE OF THE REPORT PRESENTATION (size – 14 Times New Roman)   **Appendix 1**

FEATURES OF MICROPROCESSORS OPERATION AND USE
Ivanov V.A.
Scientific supervisor – Dr. Techn. Sc., Prof. Petrenko V.P.
Kharkov National University of Radio Electronics
(Systems Engineering Department, 14, Nauka Ave., Kharkov, Tel. (057) 702-13-06),
e-mail: ivanov@nure.ua; Fax (057) 702-11-13

Single electronic devices, such as radio receivers, meters or control units, based on one crystal, have emerged with development of IC technology and circuitry … (8 – 10 lines)

The text of the report abstract…

APPLICATION FORM FOR PARTICIPATION IN THE YOUTH FORUM: **Appendix 2**

- Surname, first name, patronymic of the authors (no more than 3 persons)
- City, institution (full title of the organization), faculty, department, group
- Surname, first name, patronymic, scientific degree, appointment of the scientific supervisor
- Address for correspondence (the city index is necessary),
  e-mail, Fax, telephone number for contacts (the city code is necessary)
- Title of the scientific conference of the Forum and the section number.

SUBJECT CONFERENCES OF THE FORUM

1. CONFERENCE *"ELECTRONIC, LASER AND BIOTECHNICAL ENGINEERING"*

Section 1. **Electronic systems and technologies, including micro and nanoelectronic.**
- Electronic devices and systems for receiving and transmitting information.
- Electronic/digital/optical methods and systems for processing signals and images.
- Mathematical, statistical and software modeling of electronic systems, signals and interference, transmission, reception and recording of information in electronic systems.
- Electronic technologies and methods of diagnostics, control and monitoring.
- Modern electronics elemental base.
- Applied programming in electronics.
- Nanoelectronic and nano-optical technologies.
- Electronic systems of energy-saving technologies.
- Physical and mathematical foundations of electronics, micro- and nanoelectronics.
- Innovative teaching methods in the field of electronics, micro and nanoelectronics

Section 2. **Biomedical engineering**
- Biomedical electronic devices, appliances and systems;
- ☐Modeling, processing and analysis of medical and biological information.;
- Bionanotechnologies and biosensors in medicine and ecology;
- Biomechanics and rehabilitation engineering.

Section 3. **Photonics, laser and optoelectronic engineering**
- Physics principles of photonics;
- Laser systems and optoelecronic devices including those ones based on photon crystals ;
- Optical computers elemental base;
- Development of principles of 3D dynamic holograms creation;
- Development of optical systems using microwave devices;
- ☐Quantum informatics.
- Quantum principles and devices of information-measuring systems.

2. CONFERENCE *"AUTOMATED SYSTEMS AND COMUTERIZED TECHNOLOGIES OF RADIO ELECTRONIC INSTRUMENT MAKING"*

Section 1. **Modern technologies and means for automation of radio electronic instrument making production**
- High technologies and automation of production in radio electronic instrument making;
- Intelligent technological processes and production;
- ☐Flexible computerized, robotic and mechatronic systems;
- Microsystems technique and technology;
- The life cycle of electronic equipment: planning, organizational and design and technological support/PLM systems;
- Modeling of technological processes in production;
- CAD/CAM/CAE and CAD systems.☐
- Decision making and logistic support for production.
- Industry 4.0 Technology.

Section 2. **REA of embedded systems**
- Principles and methods of creation of intelligent equipment technical means;
- Microcontrollers in intelligent appliances and automation means;
- Software-hardware interfaces for electronic apparatus control through computer networks;
- Provision of electronic apparatus security;
- Built-in avionics systems
- Household and municipal electronic technique;
- Integration of REA of different principles of functioning into intelligent complexes.

Section 3. **Physical fundamentals of processes in radio electronics, computer science, and instrumentation**
- Thermal methods and means for nondestructive control of REA and production objects;
- Acoustic and electromagnetic methods and devices for nondestructive control of manufactured goods;
- Physical fundamentals of quantum electronics;
- Modern methods for geospace investigation;
- Physical principles of optical recording and processing of information;
- Physical modeling of processes in radio electronics.

Section 4. **Security systems for technological and production processes**
- Simulation modeling of safety systems under the influence of harmful and dangerous factors of the production environment and labor process.
- Methods and means for protection against harmful production factors;
- Ecological safety of industrial objects;
- ☐Assessment and definition of risk in the performance of production activities.
- Methods and means for monitoring of natural environment;
- Educational information-modeling systems in ecology, life safety and civil security;
- Automated systems for control and provision of safety of production processes and objects.

3. CONFERENCE *"INFORMATION RADIO TECHNOLOGIES AND TECHNICAL DATA PROTECTION"*

Section 1. Electrodynamic systems, radio engineering devices and means of radio communication.
− Scattering of electromagnetic waves in different environments.
− Mathematical modeling of electrodynamic systems.
− Theory and technology of antennas and antenna elements.
− Theory and technology of microwave range.
− Nanoelectronics and nanoantennas.
− Transmitting-receiving devices and elemental base.
− Measurement and control of signal and circuit parameters.
- Electromagnetic compatibility of radio electronic means.
- Means of wireless radio communication.

Section 2. Information radio electronic systems
- Fundamental problems of radio location, radio navigation and radio vision, and radio control;
- Methods for signals and images processing;
- Multimedia technology;
- Modern radio location, radio navigation and radio control systems;
- Technologies of countermeasures against small-dimension unmanned aerial vehicles;
- Passive radio location of radio emissions;
- Problems of counter action of radar detection of objects;
- Systems of radio electronic reconnaissance and radio electronic countermeasures;
- Distance sounding (diagnostics) of objects, earth surface and atmosphere;
- Perspective television system, television of network protocol;
- Micro and nano electromechanical systems;
- Acoustic radio electronic systems;
- Space radio electronic systems;
- Broadband chaotic signals in radio electronic systems.

Section 3. Technical protection of information
- Theory and methodology of engineering-technical protection of information;
- Software-hardware means for information protection;
- Radio electronic reconnaissance and radio electronic suppression;
- Radar systems of security;
- Modern technologies and solutions for provision of information-telecommunication systems security.`

Section 4. Devices and technologies of information and communication systems
- Methods and principles of designing embedded information-communication systems;
- Modern software-hardware platforms of embedded systems;
- Technologies and means for developing embedded systems based on microcontrollers and programmable logical matrices;
- Mobile radio electronic devices;
- Sensors and sensor networks;
- ☐ Internet technologies of things (IoT)
- Digital devices for multimedia information processing and transmitting;
- Radio electronic devices for medical informatics;
- Engineering of renewable energy sources.

Section 5. Systems and technology devices on microprocessors, microcontrollers and PLIC.
- Modeling, processing and synthesis of digital signals.
- Designing of devices on microprocessors, microcontrollers and PLIC.
- HDL-hardware description languages.
- The problem of real-time microprocessor systems development.
- Industrial Internet of Things (IoT).
- CAD hardware.

4. CONFERENCE *"PROSPECTS OF TELECOMMUNICATION AND INFORMATION-MEASUREMENT TECHNOLOGIES DEVELOPMENT"*

Section 1. Info-telecommunications problems
- General systems problems of info-telecommunications;
- Electromagnetic compatibility;
- Management, adaptation, self-organization in info-communication systems;
- Mobile info-communication systems and wireless 3G and 4G technologies;
- Software-configured SDN networks;
- Telecommunication systems with SDR technology;
- Optical wired and wireless telecommunication systems;
- Wireless telecommunication systems with MIMO technology;
- Nebulous computing and the Internet of things;
- ☐ Modern methods of digital signal processing in telecommunication systems;
- Problems of integration and convergence of technologies in telecommunications;
- Logistics in telecommunication systems;
- Design of telecommunication systems and networks.

Section 2. Information security management

- Practical basis for information security provision;
- Theory of information security risks.
- Technologies and methods for information security control.
- Network security, systems for identifying and countering attacks, network resiliency.
- Information security of software-configured SDN networks.
- Process approaches to the audit of information security management systems.
- Information security of next-generation mobile networks.
- Cybersecurity of nebulous computing and databases.
- Problems and methods of introducing the international standards of information security provision.

Section 3. Information-communication technologies
- Conceptual problems of info-communication networks construction;
- Hardware and software for granting info-communication services;
- Multicriteria optimization and mathematical simulation of info-communication networks;
- Processing of information in info-communications;
- Information protection in info-communications;
- Business processes in info-communications;
- Info-communications in the social sphere.

Section 4. Information-measurement technologies, metrological support, standardization and certification
- Development of elements of the products and services quality systems ;
- Development of measurement technique means and their metrological support;
- Methods and algorithms for measurements' results processing;
- Information-measurement technologies;
- Standardization and certification.

5. CONFERENCE *"COMPUTER SYSTEMS AND CONTROL NETWORKS AND DATA PROCESSING"*

Section 1. Physical computing
- Quantum computers;
- Mobile gadgets and laptops;
- Automotive computers;
- Smart sensors and actuators as MEMS;
- Robotics. – Drones. - 3D-printing;
- Smart brain-user interfaces;
- Security computers;
- Big data centers;
- Mobile technologies;
- Crystal-based systems;
- Crystal-based networks;
- Designing routes;
- Methods and means for verification and testing;
- Standards of test-suited design;
- Equipment description languages;
- Digital systems testing;
- Verification of mathematical models;
- Methods, models, means for testing and diagnostics.

Section 2. Virtual Computing
- Cloud computing;
- Fog network computing;
- Mobile computing;
- Service computing;
- Social computing;
-Automotive computing;
- Internet computing – Smart Everything;
- Cyber physical- or Internet of things-computing;
- Big data computing;
- Quantum computing;
- Urgency, tendencies and problems of development of the nebulous services;
- Optimization and support of nebulous systems;
- Problems of internet-integration of nebulous services;
- Solution of the infrastructure problems using "nebulous" calculations;
- Solution of the problems of organization of data storage protection using "nebulous" calculations;
- Solution of the problems of the platform for developing supplements using "nebulous" calculations;
- Application of modern technologies to social networks designing and scaling;
- Types, architecture, platforms of "nebulous" services;
- Economical aspects of "nebulous" approaches to calculations;
- Security of "nebulous" calculations medium.

Section 3. Protection of information and information resources in ICS

- Normative-legal support of the information security system;
- Methods, mechanisms and means for cryptographic protection of information;
- Infrastructures of the open keys and the system of electronic digital signature (EDS);
- Cryptographic systems synthesis and analysis;
- Synthesis and analysis of cryptographic mechanisms and protocols;
- Antivirus analytics;
- Methods of crypto analysis;
- Methods of "nebulous" calculations security.

Section 4. Theoretical and applied aspects of intelligent computing
- Intelligent analysis of big data;
- Classification and clustering of objects;
- Intelligent systems for pattern recognition;
- Neural network systems and structures;
- Fuzzy systems and fuzzy neural networks;
- Genetic and evolutionary algorithms for data processing;
- Intelligent immune systems;
- Intelligent agents and multi-agent technologies;
- Hybrid intelligent technologies;
- Methods of artificial intelligence in decision-making and control systems;

Section 5. Methods and means of data processing in heterogeneous computer systems.
- Software and hardware reconfiguration of heterogeneous components.
– Big-Data. Processing of large amounts of data.
– Highly productive computing.
– Multiservice computer networks.
- Computer graphics and visualization in technical systems.
– Methods for designing and maintaining databases in distributed information systems.
– Organization of network information structures.
– Management and support of decision making in network structures.
- Parallel and distributed software systems and structures.
- Algorithms and software for Green Technology.
- Simulation of the behavior of irregular and resource-constrained structures.

Section 6. Methods and means of computational intelligence.
- Convolutional neural networks.
- Deep machine learning technologies.
- Computational methods and models based on artificial immune systems.
- Clustering, filtering and image recognition.
- Implementation of information processing systems on the RASPBERRY PI platform.
- Multi-agent systems and technologies.

6. CONFERENCE *"INFORMATION INTELLIGENT SYSTEMS"*

Section 1. Modern problems of computational and artificial intelligence
- Hybrid neuron-fuzzy models and systems in the problems of information processing;
- Intelligent analysis of data;
- Evolutionary calculations in Web-, Text- and Genetic-Mining problems;
- Semantic technologies and ontological engineering;
- Intelligent information technologies in knowledge management;
- Intelligent processing and information integration in the distributed Web-systems.

Section 2. Information systems and technologies for project and operational management of enterprises and organizations.
- Information systems in management of business-processes of enterprises based on service-oriented architecture;
- Information technologies for monitoring and management of the enterprise business-processes;
- "Nebulous" information technologies in the enterprise management;
- Management of projects of development, introduction and support of information-control systems and information technologies and program products;
- Technologies for designing, administering , monitoring and management of corporative networks;
- Information technologies of data processing in the information systems;
- Methods and means for information transform in the information systems.
- Information technology and systems in medicine and ecology.

Section 3. Program engineering. Information technologies in learning
- Software design technologies;
- Software development technologies;
- Software quality control;
- Data algorithms and structures;
- Databases;
- Modern information technologies (Web 2.0, SAAS, cloud, parallel programming);
- Distance learning technologies (including mobile learning);
- Computer testing of knowledge;
- Automation of learning process;

- Creation of web-systems of educational nature;
- Creation of interactive laboratory practicum;
- Creation of gaming applications and virtual reality.

Section 4. Methods and means of decision-making under multicriteria and risk conditions
- Methods for regularization of multi criterion optimization problem. Multifactor estimation of systems;
- Utility theory. Methods of structural-parametric identification of the utility function;
- Expert estimation. Comparator identification method;
- ☐ Models and methods of decision-making under conditions of uncertainty of different types.
- Combinatorial decision-making problems. Methods of combinatorial optimization.
- ☐ Application of models and decision-making methods in information intelligent systems.

Section 5. Computer technologies in printing
- Technology of printed editions;
- Technology of electronic multimedia editions;
- Automated systems of polygraph production management;
- Computer technologies in digital images processing and color control;
- Descriptive geometry and computer graphics.

7. CONFERENCE "MODERN METHODS OF IMAGE PROCESSING"

Section 1. Mathematical models and methods for normalization and analysis of multimedia data
- Models and methods for images processing;
- Models and methods for images normalization;
- Analysis of multimedia data.

Section 2. Mathematical and computer simulation of big systems
- Analysis of interrelated time series: prediction and control;
- Systems analysis of problems in technical, economical and social systems;
- Stochastic models and methods in problems of management and decision-making;
- Boundary-value problems of mathematical physics and methods of their numerical analysis;
- Methods for risks estimation and control;
- Synergetic models of non-linear dynamics, deterministic chaos, fractal structures;
- Mathematical modeling in photonics.

8. CONFERENCE "HUMANITARIAN ASPECTS OF INFORMATION SOCIETY FORMATION

Section 1. Philosophical problems of the information society
- Problem of identity in the information epoch;
- Anthropological problems in the information society formation epoch;
- Socio cultural aspects of the global informatization;
- Mediaculture of the information society;
- Transformation of values in the process of the information society formation;
- Informatization of society as a factor of risky situations;
- Youth under conditions of the society of risks;
- Problems of a person socialization in the virtual space;
- Problems of socialization in the information society;
- Problem of freedom and responsibility in the information medium.

Section 2. Social-political transformations in the era of informatization and globalization
- Democracy and political regimes in the information epoch;
- Innovation transformations in the information epoch: social-political aspect;
- Information society: prospects and collisions
- Globalization and democratization of the modern world: their interrelation and interdependency;
- Totalitarian threats in the information epoch: essence and ways of their overcoming;
- Socio cultural and legal development of the information society in Ukraine.

Section 3. Psychological aspects of the information society formation
- Manipulation with consciousness in the information society: methods and mechanisms;
- Psychological aspects of a person adaptation under the information society conditions;
- Psychological-pedagogical problems of modern education;
- Self-presentation in the Internet communicative space;
- Problems of a modern specialist image formation;
- Communicative problems in the informatization epoch.

Section 4. Gender problems of modern society
- Gender and information technologies;
- Gender aspects of education under conditions of the information society;
- Family and career under conditions of modern society;
- Modern problems of gender identity.

9. CONFERENCE "KNOWLEDGE MANAGEMENT AND CONCURRENT RECONNAISSANCE"

Section 1. Management and systematization of knowledge, ontology, business technologies of knowledge consolidation

- Noospheric investigations, methods and technologies for solving complicated non-formalized problems and creation of information society;
- Trans-disciplinary research;
- Modern system analysis, systemology as means of noosphere creating, systemology methods and technologies;

- Classification and systematization of knowledge;
- Ontology, ontological engineering, conceptual and semantic simulation;
- Methods and technologies for knowledge management and knowledge engineering, extraction and acquisition of knowledge;
- Formation of intellectual capital of organizations and the knowledge economy;
- Learning organizations, innovation methods and technologies of learning, community of practice; personal knowledge management;
- Object-oriented simulation, requirements' analysis and control;
- Social communications, intellectualization of information-communication technologies (ICT), social networks and Internet-technologies in social systems, search optimization, e-learning;
- Cognitive research and artificial intelligence;
- Methods and models for concurrent reconnaissance and stable development;
- Application of knowledge-oriented technologies in information security;
- Corporative culture, motivation and alternations management.

Section 2. Organization and modeling of business
- Analysis and simulation of business-processes;
- Management of business-process and business-analytics;
- Methods and technologies of organization and planning of business;
- Methods of business processes designing, engineering and re-engineering of business;
- Methods and technologies for decision-making support;
- Methods and technologies of political analysis and state management, electronic government;
- New methods and technologies for information management;
- Intelligent analysis of data, storage and data bases;
- Application of methods and technologies of the concurrent reconnaissance and risks management in the information security.

Section 3. Social informatics and management
- Social informatics;
- Information technologies in the social systems management;
- Social processes prediction;
- Intelligent systems of management and decision-making in economics and business;
– Methods and technologies for decision support;
– Methods and technologies of political analysis and public administration, e-government;
- Systems analysis and management of complex engineering-economical systems;
- Applied methods of the systems analysis;
- Automated information systems and technologies;
- Mathematical modeling of social, economical and ecological processes;
- Mathematical models in organization systems.

10. CONFERENCE "URGENT PROBLEMS OF ECONOMICAL CYBERNETICS AND ECONOMIC SECURITY"

Section 1. Economical cybernetics
- Economic theory and history of economic thought.
– World economy and international economic relations.
– Economics and national economy management.
– Economics and management of enterprises.
– Development of productive forces and regional economy.
– Problems of ecological and economic development of territories.
– Demography, labor economics, social economics and politics.
– Money, finance and credit.
– Accounting, analysis and audit.
– Statistics.
– Modeling of economic processes in infrastructure industries.
– Mathematical methods, models and information technologies in economics.
– Information business and e-commerce.

Section 2. Financial-economical security management
- Organization and management of the enterprise's financial and economic security system.
– Provision of national security system.
– Organizational and legal support of financial and economic security of business entities.
– Information and analytical support and monitoring of financial and economic security.
– Safely oriented management and personnel reliability assessment methods.
– Corporate conflicts and counteraction to raiding.
– Organization and management of information security with limited access
– Organization and management of property and personal security of the entrepreneur.
– Methods of the model for diagnosing the level of economic security of business structures.

11. CONFERENCE "STATE ORGANIZATION OF UKRAINE, LANGUAGE, CULTURE IN THE INFORMATION MILLENNIUM"

Section1. The Ukrainian language since ancient times to the contemporaneity
- The origin and stages of development of the Ukrainian language;
- Lexical, grammatical and stylistic features of professional texts;
- Terminology as linguistic science of terms;
- Formation and development of branch terminological systems;
- Terms and nomenclature units in scientific texts;
- Peculiarities and difficulties of translating scientific and technical texts;
- Stylistics of a scientific text;
- Media text. Features of its functioning;
- Culture of communication in professional activity;
- Techniques and types of rhetoric in professional activity;
- Language etiquette for professional communication;
- History and characteristics of office work;
- Functioning of regional languages in Ukraine;
- Norms of Ukrainian spelling: history and modernity.

Section 2. Historical, regional, geopolitical aspects of culture
- The origin and characteristics of the development of world cultures.
- Material and spiritual culture: common and different.
- Archeology as a source of study of ancient cultures and civilizations.
- State and culture: choice of priorities, ways to implement policies in the humanitarian sphere.
- Historical origins and traditions of Ukrainian statehood.
- Achievements and problems of Ukrainian history and culture.
- Ukrainian foreign policy and cultural relations in different historical periods.
- Cultural features of historical and ethnographic regions of Ukraine.
- Features of Ukrainian folk art.
- Ukrainian traditions and customs in the information millennium.
- Outstanding figures of Ukrainian culture.
- Volunteer movement and its significance in modern Ukraine.

12. CONFERENCE *"LANGUAGE IN A POLICULTURAL WORLD: DEVELOPMENT OF INTERNATIONAL EDUCATION"*

Section 1. The creative approach of students to mastering the future engineering specialties.
- Use of IT-technologies in industry;
- Distance learning in the educational process**;**
- Intelligent information technology at the present stage;

Section 2. Innovations in the modern economy.
- Information technology in the modern economy;
- Economic theory and history of economics;
- Economics in international relations;

Section 3. The role of medicine and biology in the life of a modern person.
- Biomedical electronic devices for diagnostics;
- Innovations in modern medicine;
- Problems of a balanced diet of modern man;

Section 4. The need for competence in the socio-legal sphere.
- Psychological aspects of the adaptation of foreigners;
- The essence and ways of overcoming the legal incompetence of foreigners;
- Communicative problems of foreigners in the modern world;

Section 5. Humanities - the basis of the comprehensive development of the personality.
- Culture speech of foreigners in terms of bilingualism;
- Ways of overcoming language barriers in terms of another country;
- History and culture of countries in a multicultural world.

ORGANIZING COMMITTEE ADDRESS:

IMD (room 437), KNURE, 14, Nauka Ave., Kharkov, 61166
Telephones for contacts: +38(057) 702-13-97   Fax: +38(057) 702-13-97
E-mail: **mref21@nure.ua** ;   site: **www.nure.ua**

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