

**INTERNATIONAL CONFERENCE «NUCLEUS-2018»**  
**«FUNDAMENTAL PROBLEMS OF NUCLEAR PHYSICS,**  
**ATOMIC POWER ENGINEERING AND NUCLEAR TECHNOLOGIES»**  
**(68-th Conference on nuclear spectroscopy and atomic nucleus structure)**  
**Voronezh, Russia, July 1 – 6, 2018**

**THE CONFERENCE ORGANIZERS**

**Russian Academy of Science**

**Joint Institute for Nuclear Research**

**Voronezh State University**

**Novovoronezh NPP**

Kadmensky S.G.	Chairman	VSU	Voronezh
Zelenskaya N.S.	Co-Chairman	SINP of MSU	Moscow
Popov V.N.	Co-Chairman	VSU	Voronezh
Povarov V.P.	Co-Chairman	NV NPP	Novovoronezh
Vlasnikov A.K.	Co-Chairman	SIP of SPSU	S.-Petersburg
Samarin V.V.	Co-Chairman	JINR	Dubna
Vahtel' V.M.	Vice-chairman	VSU	Voronezh
Titova L.V.	Scientific secretary	VSU	Voronezh

**THE CONFERENCE SUBJECTS**

**1. Experimental investigations of atomic nucleus properties. (section 1)**

- neutron-rich nuclei;
- nuclei far from stability valley;
- giant resonances;
- many-phonon and many-quasiparticle states of nuclei;
- high-spin and super-deformed states of nuclei;
- beta-decays of nuclei;
- synthesis of super-heavy elements.

**2. Experimental investigations of nuclear reactions mechanisms. (section 2)**

- reactions with radioactive nuclear beams;
- reactions with polarized particles;
- heavy-ion reactions;
- fusion and fission of nuclei;
- multi-fragmentation of nuclei;
- neutron reactions and ultracold neutrons;
- reactions induced by elementary particles.

**3. Theory of atomic nucleus and fundamental interactions.**

**(section 3)**

- many-body problem in nuclear physics;
- microscopic description of collective degrees of freedom and their interactions with single-particle degrees of freedom;
- theory of few-particles systems;
- non-linear nuclear dynamics;
- meson and quark degrees of freedom in nuclei, mesoatoms;

- hypernuclei and other nuclear exotic systems;
- double beta-decay and neutrino mass problem;
- interaction of nucleus with electrons of atomic shell;
- verification of theories of elementary particles interaction and conservation laws;
- physics of nucleus and particles in application to astrophysical objects.

#### **4. Nuclear reactions theory (section 4)**

- theory of direct and statistical nuclear reactions, theory of multiple scattering;
- theory of reactions with clusters and heavy ions;
- theory of relativistic nuclear collisions;
- theory of polarization phenomenon in nuclear reactions;
- theories of proton, two-protons and cluster radioactivity and fission of nuclei.

#### **5. Technique and methods of experiment and applications of nuclear-physical methods. (section 5)**

- Perspectives of nuclear medicine development;
- Nuclear-physics for nanophysics and nanotechnologies;
- Radiation technologies for micro and nanoelectronics and new materials;
- Problems of radiational reliability and durability of microelectronics products and of cosmic systems.

#### **6. Fundamental problems of nuclear power and nuclear technologies. (section 6)**

- problems of atomic power reactors with slow and fast neutrons;
- problems of radioactive waste treatment;
- transmutation methods;
- channeling of nuclei and elementary particles;
- radiation technologies for micro- and nano-electronics and new materials producing.

#### **7. Experience and problems of qualitative training of Russian and foreign specialists in field of nuclear physics, atomic power engineering and nuclear technologies. (section 7)**

It has been planned the realization of Plenary sessions with invited talks (20–30 min.), parallel sessions with original reports (10–15 min) and poster talks.

The reporters will be provided with an Overhead projector or computer support (Microsoft Power Point).

Conference proceedings will be published in Izvestiya RAN, Ser. Fizicheskaya, Physics of Atomic Nuclei and Nuclear Physics and Engineering.

### **WORKING LANGUAGES OF THE CONFERENCE**

Working languages of the Conference are English and Russian.

### **PLACE OF THE CONFERENCE**

The Conference will be held in Voronezh.

### **CONFERENCE FEE**

Conference fee of 4000 Rub or equivalent in US dollar for participants and the half of these amounts for accompanying persons includes car transportation, break refreshments, Welcome party, Conference dinner, and a copy of Conference proceedings.

The fee is due to payment on Conference bank account before registration.

Expenses on hotel accommodation and meals are paid by participants themselves.

### **ARRIVAL AND REGISTRATION**

Arrival days of participants are July 1-2, 2018. The Conference Opening will be at 9<sup>00</sup> a.m. on July, 2, 2018.

### **THE ORGANIZING COMMITTEE ADDRESS**

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**In order to take part in the Conference it is necessary to submit by January 31, 2018 to the Organizing Committee the Application Form in electronic form (file Application Form NUCLEUS 2018.doc).**