



KAZAKH PHYSICAL SOCIETY



NATIONAL NUCLEAR CENTER
of the Republic of Kazakhstan

PROGRAM

Third Annual Meeting of Kazakh Physical Society

June 7–11, 2023
Kurchatov, Kazakhstan

CONFERENCE ORGANIZERS

- **Kazakh Physical Society**
- **National Nuclear Center of the Republic of Kazakhstan**

ORGANIZING COMMITTEE

Chair:

T. A. Kozhamkulov, President of KPS

Co-Chairs:

T. S. Ramazanov, Vice-President of KPS, Al-Farabi University

E. G. Batyrbekov, Director of the National Nuclear Center of RK

K. A. Baigarin, Head of Astana Branch of KPS, Nazarbayev University

SCIENTIFIC PROGRAM COMMITTEE

*KazNU: T. A. Kozhamkulov, T. S. Ramazanov, A. E. Davletov, M. E. Abishev,
N. Zh. Takibayev, K. N. Dzhumagulova;*

*NU: K. A. Baigarin, A. Desyatnikov, A. Nurmukhanbetova, Z. Utegulov, A. Tikhonov,
A. Zhumabekov, A. Bountis, M. Kaikanov;*

ENU: R. Myrzakulov, A. K. Aryngazin;

KBTU: M.T. Gabdullin, K. Kh. Nussupov, N. B. Beisenkhanov;

KazNTU: R. Beisenov;

KazNPU: A. I. Kupchishin, V. N. Kosov;

NNC RK: E. G. Batyrbekov, M. K. Skakov, V.A.Vityuk, V.V.Baklanov

INP: S.K. Sakhiev, N. T. Burtebayev, T. Zholdybayev, M. Zdorovets;

PTI: T. K. Sadykov, A. Serikkanov;

FAPU: Ch. T. Omarov;

II: V. M. Somsikov, O. N. Krikunova;

KSU: N. Ibrayev;

TSHVNS: V. V. Zhukov;

ZhSU: E. S. Andasbaev.

LOCAL ORGANIZING COMMITTEE:

- **The National Nuclear Center of the Republic of Kazakhstan**
- **International Scientific Technology Center**

MEETING SCHEDULE

Astana time
(GMT+6)

June 7,
Wednesday

- Arrival and registration of the participants, technical tours to facilities of RSE NNC RK
- **Dinner 18.30**

June 8,
Thursday

- **Breakfast..... 07.30–08.30**
- Opening 09.00–09.40
- Plenary Session..... 09.40–10.40
- **Coffee break, Poster Session..... 10.40–11.00**
- Plenary Session..... 11.00–13.00
- **Lunch 13.00–14.00**
- Plenary Session..... 14.00–18.40
- **Side event..... 14:40–15.20**
- **Coffee break, Poster Session..... 15.20–15.45**
- **Round table 18.05–18.40**
- **Official Reception 19.00**

June 9,
Friday

- **Breakfast 08.00–09.00**
- Session..... 09.00–13.00
- **Coffee break, Poster Session 10.30–10.55**
- **Lunch..... 13.00–14.00**
- Technical tours to facilities of RSE NNC RK 14.00–18.30
- **Dinner..... 18.30**

June 10,
Saturday

- **Breakfast..... 07.30–08.30**
- Technical tours to facilities of RSE NNC RK..... 08.30–18.00
- **Lunch 14.00–15.00**
- **Dinner 18.30**
- Departure of the participants from Kurchatov

June 11,
Sunday

- **Breakfast 08.00–09.00**
- Departure of the participants from Kurchatov

PROGRAM

June 7 (Wednesday)

09.00–18.30

-
- | | | |
|---|--|-------------|
| – | Arrival and registration of the workshop participants | 09.00–18.00 |
| – | Technical tours to the facilities of RSE NNC RK:
- Exposition Hall of the STS history;
- KTM Tokamak;
- Laboratory buildings;
- Laboratory areas of hydrogen and plasma technology;
- EAGLE test bench | 14.00–18.00 |
-

Dinner

18.30

June 8 (Thursday)

09.00–18.40

Conference Hall of NNC RK

Chairs: Tolegen Kozhamkulov, Erlan Batyrbekov

OPENING CEREMONY

- | | | |
|---|--|-------------|
| 1 | Opening remarks
<i>Director General of the National Nuclear Center
of the Republic of Kazakhstan
Erlan Batyrbekov</i> | 09.00–09.10 |
| 2 | Welcome speech
<i>Minister of Energy of the Republic of Kazakhstan
Almasadam Satkaliyev</i> | 09.10–09.20 |
| 3 | Welcome speech
<i>President of the National Academy of Science
of the Republic of Kazakhstan
Kunsulu Zakariya</i> | 09.20–09.30 |
| 4 | Welcome speech
<i>President of Kazakh Physical Society
Tolegen Kozhamkulov</i> | 09.30–09.40 |
-

5	ACTIVITY OF THE NATIONAL NUCLEAR CENTER OF THE REPUBLIC OF KAZAKHSTAN IN THE PEACEFUL USE OF ATOMIC ENERGY <i>Vladimir Vityuk (National Nuclear Center of RK, Kazakhstan)</i>	09:40–10.00
6	ACCEPTANCE TESTS OF WCTC WITH LEU FUEL AT THE IVG.1M RESEARCH REACTOR SITE IN KAZAKHSTAN <i>Igor Bolshinsky (Idaho National Laboratory, USA)</i>	10.00–10.20
7	SYNTHESIS AND COORDINATION OF ALUMINA NANOPORES AND CARBON NANOWALLS FOR THE GENERATION OF DISTINCTIVE GEOMETRIC NANOSTRUCTURES <i>Maratbek Gabdullin (Kazakh-British Technical University, Kazakhstan)</i>	10.20–10.40
<i>Coffee break, Poster Session</i>		10.40–11.00
8	EFFECTIVE POTENTIALS AND PHYSICAL PROPERTIES OF A DENSE PLASMA <i>Tlekkabul Ramazanov (Al-Farabi Kazakh National University, Kazakhstan)</i>	11.00–11:20
9	CEA – NNC COOPERATION: THE SAIGA IN-PILE EXPERIMENTAL PROGRAM TO QUALIFY THE SIMMER CALCULATION TOOL IN SFR SEVERE ACCIDENT CONDITIONS <i>Frederic Payot (French Alternative Energies and Atomic Energy Commission (CEA), France), Alexander Vurim (Institute of Atomic Energy of NNC RK, Kazakhstan)</i>	11.20–11.40
10	MORE ON GRAVITATIONAL WAVES FROM DOUBLE MONODROMY INFLATION <i>Medeu Abishev (Al-Farabi Kazakh National University)</i>	11.40–12.00
11	CURRENT CHALLENGES OF THE NATIONAL RESEARCH CENTER “KURCHATOV INSTITUTE” IN CONTROLLED FUSION AND FUSION FISSION HYBRID SYSTEMS <i>Boris Kuteyev (NRC “Kurchatov Institute”, Russia)</i>	12.00–12.20
12	THE ITER PROJECT: PROGRESS AMID CHALLENGES <i>Mario Merola (ITER, France)</i>	12.20–12.40
13	THE SIGNIFICANCE OF INTERFACIAL ENGINEERING FOR PEROVSKITE PHOTOVOLTAICS <i>Annie Ng (Nazarbayev University, Kazakhstan)</i>	12.40–12.50

14	IMPACT OF DIFFERENT CARBON NANOMATERIALS ON CHARGE PROPAGATING PROPERTIES OF ENERGY STORAGE DEVICES <i>Vladimir Pavlenko (Al-Farabi Kazakh National University, Institute of Combustion Problems, Kazakhstan)</i>	12.50–13.00
Lunch		13.00–14.00
Chairs: Tlekkabul Ramazanov, Vladimir Vityuk		
15	THE RESEARCH COOPERATION WITH THE NATIONAL NUCLEAR CENTER OF THE REPUBLIC OF KAZAKHSTAN TO ENHANCE THE SAFETY OF SODIUM-COOLED FAST REACTORS <i>Kenji Kamiyama (Japan Atomic Energy Agency)</i>	14.00–14.20
16	EXPERIMENTS AT THE GLOBUS-M2 TOKAMAK: CURRENT RESULTS AND PROSPECTS <i>Nikolay Bakharev (Ioffe Physical Technical Institute, Russia)</i>	14.20–14.40
	SIDE EVENT “EPOCHAL DISCOVERIES IN PHYSICS AND DEVELOPMENT OF CONTEMPORARY MUSIC” Key speaker: Rakhat-Bi Abdyssagin (Kazakhstan) Moderator: Vladimir Vityuk	14:40–15.20
Coffee break, Poster Session		15.20–15.45
17	COMPARATIVE STUDY OF THE TRIBOLOGICAL AND CORROSION CHARACTERISTICS OF TICN, TICRCN AND TIZRCN COATING <i>Wieleba Wojciech (Wroslaw University of Technology, Poland)</i>	15.45–15.55
18	INVESTIGATION OF STRUCTURAL AND ELECTRO-CHEMICAL PROPERTIES OF $\text{SrFe}_x\text{Co}_{1-x}\text{O}_{3-\delta}$ PEROVSKITE OXIDES AS A SUPERCAPACITOR ELECTRODE MATERIAL <i>Ali Coruh (Sakarya University, Turkey)</i>	15.55–16.05
19	NEW NANO-FABRICATION FACILITY AT NAZARBAYEV UNIVERSITY <i>Alexander Tikhonov (Nazarbayev University, Kazakhstan)</i>	16.05–16.15
20	CONVERSION OF THE IVG.1M REACTOR TO THE LOW ENRICHED URANIUM FUEL <i>Vyacheslav Gnyrya (Institute of Atomic Energy of NNC RK, Kazakhstan)</i>	16.15–16.25
21	SILICON CARBIDE SYNTHESIZED BY RF MAGNETRON SPUTTERING IN THE COMPOSITION OF A DOUBLE LAYER ANTIREFLECTION COATING SiC/MgF_2 <i>Nurzhan B. Beisenkhanov (Kazakh-British Technical University)</i>	16.25–16.35

22	VAVILOV-CHERENKOV DIPOLE RADIATION <i>Seil Sautbekov (Al-Farabi Kazakh National University, Kazakhstan)</i>	16.35–16.45
23	DETERMINATION OF THE ACTIVATION ENERGY OF TRITIUM DIFFUSION IN CERAMIC BREEDERS BY REACTOR POWER VARIATION <i>Inesh Kenzhina (Satbayev University, Kazakhstan)</i>	16.45–16.55
24	PRODUCTION OF A CEMENTITIOUS WASTE FORM FOR IRRADIATED GRAPHITE FUEL <i>Yerbolat Koyanbayev (Institute of Atomic Energy of NNC RK, Kazakhstan)</i>	16.55–17.05
25	INTENSE PULSED ION BEAM APPLICATION FOR THIN-FILMS AND NANOMATERIALS MODIFICATION <i>Marat Kaikanov (Nazarbayev University, Kazakhstan)</i>	17.05–17.15
26	STUDY OF THE TEMPERATURE DEPENDENCE A CARBIDIZED LAYER FORMATION ON THE TUNGSTEN SURFACE UNDER PLASMA IRRADIATION <i>Gainiya Zhanbolatova (Institute of Atomic Energy of NNC RK, Kazakhstan)</i>	17.15–17.25
27	OPTICAL RADIATION FROM THE SPUTTERED SPECIES DURING NOBLE GASES AND THEIR MIXTURES EXCITATION BY PRODUCTS OF ${}^6\text{Li}(n,\alpha){}^3\text{H}$ NUCLEAR REACTION <i>Kuanysh Samarkhanov (Institute of Atomic Energy of NNC RK, Kazakhstan)</i>	17.25–17.35
28	STRUCTURAL, MORPHOLOGICAL, AND ELECTRICAL PROPERTIES OF CARBON NANOWALLS OBTAINED BY ICP-PECVD METHOD <i>Rakhymzhan Zhumadilov (Kazakh-British Technical University, Kazakhstan)</i>	17.35–17.45
29	INVESTIGATION OF THE PLASMA FLUX INTERACTION WITH FUSION REACTORS FIRST-WALL CANDIDATE MATERIALS <i>Aigerim Tazhen (Al-Farabi Kazakh National University, Institute of Experimental and Theoretical Physics, Kazakhstan)</i>	17.45–17.55
30	DISSOCIATION OF QUARKONIUM IN VISCOUS QUARK-GLUON PLASMA <i>Yernur Kuanyshtaiuly (Al-Farabi Kazakh National University, Kazakhstan)</i>	17.55–18.05

ROUND TABLE

18.05–18.40

”TRAINING OF HUMAN RESOURCES FOR NUCLEAR
INDUSTRY”**Key speaker:** *Daniyar Janseitov (Institute of Nuclear Physics,
Kazakhstan)***Co-speakers:** *Al-Farabi Kazakh National University;
National Nuclear Center RK*

*Official Reception***19.00**

June 9 (Friday)**09.00–18.30***Chairs: Mazhyn Skakov, Kanat Baigarin*

-
- | | | |
|---|---|-------------|
| 1 | INTERFACIAL PHONON THERMAL TRANSPORT ACROSS
GRAPHENE-CARBON NITRIDE AND SILICON CARBIDE
STRUCTURES
<i>Omid Farzadian (Nazarbayev University, Kazakhstan)</i> | 09.00–09.10 |
| 2 | OVERVIEW OF THE FIRST EXPERIMENTAL RESULTS
AT THE KTM TOKAMAK
<i>Baurzhan Chektybayev (Institute of Atomic Energy of NNC RK,
Kazakhstan)</i> | 09.10–09.20 |
| 3 | COMBINING INTERSTELLAR DUST AND GAS OBSERVA-
TIONS TO STUDY THE ROLE OF THE MAGNETIC FIELDS
IN STAR FORMATION
<i>Dana Alina (Nazarbayev University, Kazakhstan)</i> | 09.20–09.30 |
| 4 | SCANNING TUNNELING MICROSCOPY AND
SPECTROSCOPY OF LAYERED MATERIALS
<i>Kuanysh Zhussupbekov (School of Physics, The University
of Dublin)</i> | 09.30–09.40 |
| 5 | HEAT TRANSPORT ACROSS NANOSCALE DAMAGE
PROFILE AND THERMAL ANISOTROPY IN SAPPHIRE
IRRADIATED BY SWIFT HEAVY IONS
<i>Zhandos Utegulov (Nazarbayev University, Kazakhstan)</i> | 09.40–09.50 |
| 6 | DEVELOPMENT OF THE TECHNOLOGY OF NEUTRON-
TRANSMUTATION DOPING OF SILICON AT THE WWR-K
REACTOR
<i>Natalya Romanova (Institute of Nuclear Physics, Kazakhstan)</i> | 09.50–10.00 |
-

7	DEPTH-DEPENDENT THERMAL CONDUCTIVITY AND DAMAGE IN SWIFT HEAVY ION IRRADIATED METAL OXIDES <i>Azat Abdullayev (Nazarbayev University, Kazakhstan)</i>	10.00–10.10
8	THE PROPERTIES OF DUSTY PLASMAS WITH MICRO- AND NANOPARTICLES IN A MODULATED RF DISCHARGE <i>Almasbek Utegenov (Institute of Applied Science and Information Technologies, Kazakhstan)</i>	10.10–10.20
9	EXPERIMENTAL STUDY OF Ga ⁺ ION INTERACTIONS WITH PMMA IN ION BEAM LITHOGRAPHY <i>Mukhit Muratov (Al-Farabi Kazakh National University)</i>	10.20–10.30
<i>Coffee break, Poster Session</i>		10.30–10.55
<i>Chairs: Maratbek Gabdullin, Viktor Baklanov</i>		
10	STUDIES OF TWO-PHASE LITHIUM CERAMICS Li ₄ SiO ₄ -Li ₂ TiO ₃ UNDER CONDITIONS OF NEUTRON IRRADIATION <i>Yevgeniy Chikhray (Al-Farabi Kazakh National University, Kazakhstan)</i>	10.55–11.05
11	WAVES IN THE COLLISIONAL AND VISCOUS QUARK-GLUON PLASMA <i>Kassymkhan Baiseitov (Al-Farabi Kazakh National University, Kazakhstan)</i>	11.05–11.15
12	DEVELOPMENT OF CYTOGENETIC BIOLOGICAL DOSIMETRY IN KAZAKHSTAN FOR PREPAREDNESS AND RESPONSE TO RADIATION EMERGENCIES <i>Laura Kenzhina (Institute of Radiation Safety and Ecology of NNC RK, Kazakhstan)</i>	11.15–11.25
13	ANALYSIS OF DEAD-ZONE FORMATION IN DIFFUSION-REACTION PROCESSES WITH GENERALIZED DIFFUSION FLUX <i>Bek Kabduali (Nazarbayev University, Kazakhstan)</i>	11.25–11.35
14	INVESTIGATION OF THE INFLUENCE OF ELECTRON AND PROTON IRRADIATION ON THE STRUCTURAL AND ELECTRONIC CHARACTERISTICS OF CARBON NANOWALLS <i>Yerassyl Yerlanuly (Kazakh-British Technical University, Kazakhstan)</i>	11.35–11.45
15	STUDY OF RESONANT REACTIONS AT ASTANA DC-60 CYCLOTRON <i>Aliya Nurmukhanbetova (Nazarbayev University, Kazakhstan)</i>	11.45–11.55

16	MODELING OF DYNAMIC OPERATION MODES OF IVG.1M REACTOR <i>Olzhas Zhanbolatov (Institute of Atomic Energy of NNC RK, Kazakhstan)</i>	11.55–12.05
17	ON THE ISSUE OF PHYSICAL AND BIOLOGICAL DOSIMETRY IN KAZAKHSTAN <i>Dina Biyakhmetova (Institute of Radiation Safety and Ecology of NNC RK, Kazakhstan)</i>	12.05–12.15
18	INFLUENCE OF THE CARBIDIZED TUNGSTEN SURFACE ON THE PROCESSES OF INTERACTION WITH HELIUM PLASMA <i>Arman Miniyazov (Institute of Atomic Energy of NNC RK, Kazakhstan)</i>	12.15–12.25
19	CHARACTERISTICS OF THE OPEN FUEL CYCLE OF IVG.1M RESEARCH REACTOR AFTER CONVERSION <i>Artur Surayev (Institute of Atomic Energy of NNC RK, Kazakhstan)</i>	12.25–12.35
	Closing remarks	12.35–13.00
	<i>Lunch</i>	13.00–14.00
	<i>Technical tours to “Baikal-1” Site/ IGR Site, Experimental Field</i>	14.00–18.30
	<i>Dinner</i>	18.30
June 10 (Saturday)		
09.00–18.00		
	<i>Technical tours to “Baikal-1” Site/ IGR Site, Experimental Field</i>	08.30–18.00
	<i>Lunch</i>	14.00–15.00
	<i>Dinner</i>	18.30
	<i>Departure of the participants</i>	
June 11 (Sunday)		
09.00 – 18:00		
	<i>Breakfast</i>	08.00–09.00
	<i>Departure of the participants</i>	09.00–18.00



NATIONAL NUCLEAR CENTER
of the Republic of Kazakhstan

Beibyt Atom St. 2B, Kurchatov
071100, Republic of Kazakhstan, Abai region
+7 (722 51) 3 38 58 +7 (722 51) 3 33 33
nnc@ nnc.kz <http://www.nnc.kz>