

XVI Zababakhin Scientific Talks
International Conference
at
Russian Federal Nuclear Center –
Zababakhin All-Russia Scientific Research Institute
of Technical Physics

CONFERENCE SESSIONS AND THEIR LOCATIONS

Designations:

I – Plenary session;  – online report;

1-1...1P – the first digit – section number, the second digit – session number, letter “P” – poster session

Talks in the program are numbered as in the book of abstracts.

SITE	May 29		May 30		May 31		June 1		June 2	
	9 ³⁰ –13 ⁰⁰	14 ³⁰ –18 ⁰⁰	9 ⁰⁰ –13 ⁰⁰	14 ³⁰ –18 ⁰⁰	9 ⁰⁰ –13 ⁰⁰	14 ³⁰ –18 ⁰⁰	9 ⁰⁰ –13 ⁰⁰	14 ³⁰ –18 ⁰⁰	9 ⁰⁰ –13 ⁰⁰	14 ³⁰ –18 ⁰⁰
DK Oktyabr	Opening ceremony I									
Hall 1 (room 313, 3 rd floor)	4-1	4-2	2-1	2-2	5-1	4-4	5-2	4-5	4-5	Closing
Hall 2 (room 321, 3 rd floor)	1-1	1-2	6-1	6-2	6-3	6-5	6-4	6-6	6-6	
Hall 3 (room 129, 1 st floor)	7-1	7-2	3-1	3-2	4-3					
Posters (Foyer)	1P (11)		3P (11)		5P (10)					
	4P (19)		2P (41)		6P (19)					
	7P (1)									
Coffee-break	16 ⁰⁰ –16 ³⁰	10 ⁴⁵ –11 ¹⁵	16 ⁰⁰ –16 ³⁰	10 ⁴⁵ –11 ¹⁵	16 ⁰⁰ –16 ³⁰	10 ⁴⁵ –11 ¹⁵	16 ⁰⁰ –16 ³⁰	10 ⁴⁵ –11 ¹⁵	16 ⁰⁰ –16 ³⁰	10 ⁴⁵ –11 ¹⁵
City library										

Section	Session	Day	Morning		Afternoon	
			9 ⁰⁰ -10 ⁴⁵	11 ¹⁵ -13 ⁰⁰	14 ³⁰ -16 ⁰⁰	16 ³⁰ -18 ⁰⁰
CHAIRMEN OF SESSIONS						
Opening ceremony Plenary session		May 29	G. N. Rykovanov			
	1, P	May 29	V. N. Nogin, K. A. Ten			
1	2, P	May 30	I. V. Glazyrin, A. A. Tyaktev			
	1, P	May 30	G. G. Savenkov, A. L. Zherebtsov			
2	2, P	May 31	K. A. Ten, E. B. Smimov			
	1, P	May 30	A. P. Kuznetsov			
3	2, P	May 31	E. A. Govras, M. V. Starodubisev			
	1, P	May 29	S. I. Glazyrin, V. M. Gubchenko			
4	2, P	May 30	O. B. Naimark, A. V. Petrovtsev			
	3,	May 31	A. V. Pavlenko, A. Yu. Dolgoborodov			
5	4	June 1	D. G. Pankratov, I. G. Brodova			
	5	June 2	I. V. Khomskaya, E. V. Shorokhov			
6	1, P	May 31	V. A. Simonenko, I. R. Makeeva			
	2, P	June 1	D. V. Khmel'nitskiy, V. P. Sokolov			
7	1	May 30	A. A. Bragin, S. V. Senchukov			
	2, 3, P	May 31	M. M. Shatov, Ya. V. Pronin			
6	4, 5, P	June 1	A. V. Karpeev, Ph. A. Sapozhnikov			
	6	June 2	I. S. Chubareshko, A. P. Ponomarev			
7	1, P	May 29	S. N. Lebedev G. D. Kaminskiy			
	2, P	May 30	A. V. Sokolov, Yu. G. Rykov			
Closing		June 2	V. A. Simonenko			

CONFERENCE OPENING

MAY 29, MONDAY

Hall of DK Oktyabr

Chairman: Georgy N. Rykovanov

9³⁰ **CONFERENCE OPENING**

GREETINGS BY:

Mikhail E. Zheleznov, Director General of RFNC – VNIITF

Georgy N. Rykovanov, Scientific Director of RFNC – VNIITF

9⁴⁰ **ANNOUNCEMENTS BY PROGRAM AND ORGANIZATIONAL COMMITTEES**

PLENARY SESSION

MAY 29, MONDAY

Hall of DK Oktyabr

Chairman of the session: Georgy N. Rykovanov

10⁰⁰ **SCIENTIFIC, TECHNICAL, AND ECONOMIC ASPECTS IN DEVELOPING
ADVANCED REACTORS FOR SMALL AND MEDIUM NUCLEAR POWER PLANTS**

Vitaly V. Petrunin, D. V. Shchekin, A. V. Kurachenkov, S. A. Fateev
Afrikantov OKB Mechanical Engineering, Nizhny Novgorod, Russia

10⁴⁰ **DEVELOPING THE RUSSIAN ORBITAL STATION'S MANNED FLIGHT
PROGRAM**

Vladimir A. Soloviev
PJSC "S.P. Korolev Rocket and Space Corporation Energia", Korolev, Russia

3-31 11²⁰ **STUDIES ON PLASMA PHYSICS AND LABORATORY ASTROPHYSICS
ON THE PEARL LASER FACILITY**

Mikhail V. Starodubtsev, R. S. Zemskov, A. V. Kotov, S. E. Perevalov, A. A. Soloviev
Institute of Applied Physics of the Russian Academy of Sciences (IAP RAS), Nizhny Novgorod, Russia

12⁰⁰ **CURRENT METHODS USED TO INVESTIGATE GAS-DYNAMICS**

Alexander V. Pavlenko, A. Yu. Garmashev, A. V. Bochkov
FSUE "Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical
Physics", Snezhinsk, Russia

12⁴⁰ **TAKING GROUP PHOTO**

13⁰⁰ *Lunch*

SECTION 1

Section 1 **SPACE PROTECTION OF THE EARTH, HIGH-INTENSITY PROCESSES AND TURBULENCE**

MAY 29, MONDAY

Afternoon session

Hall 2

Co-chairs: Vladimir N. Nogin,
Konstantin A. Ten

Presentations

- 1-6 14³⁰ **THE CHELYABINSK METEORITE: 10 YEARS ON EARTH**
Viktor I. Grokhovsky¹, M. Yu. Larionov¹, A. Yu. Pastukhovich¹, E. V. Petrova¹,
R. F. Muftakhedinova¹, G. A. Yakovlev¹, V. V. Sharygin^{1, 2}, E. V. Brusnitsyna¹
¹EXTRA TERRA CONSORTIUM, Institute of Physics and Technology, Ural Federal University,
Yekaterinburg, Russia
²Sobolev Institute of Geology and Mineralogy SB RAS, Novosibirsk, Russia
- 1-3 14⁵⁰ **EARTH BOMBARDMENT BY GALACTIC COMETS AS THE CAUSE
 OF SUPERCONTINENTAL CYCLICITY: A NEW PHYSICAL INTERPRETATION
OF THE “TRUE POLAR WANDER (TPW)” PHENOMENON**
Azary A. Barenbaum
Oil and Gas Research Institute RAS, Moscow, Russia
- 1-12 15¹⁰ **STRONG SHOCK WAVES MOVING WITH THE POWER-LAW
TO THE CENTER OR TO THE AXIS OF SYMMETRY**
Alexander N. Kraiko, H. F. Valiev
P. I. Baranov Central Institute of Aviation Motors, Moscow, Russia
- 1-21 15³⁰ **SPECIFIC STRONG GAS COMPRESSION CONFIGURATIONS
AND SOME RECOMMENDATIONS ON LTF TARGETS**
Evgeny I. Ponkin^{1, 2}, S. P. Bautin¹, Y. V. Nikolaev¹
¹Snezhinsk Engineering and Technological Institute of National Research Nuclear University MEPhI,
Snezhinsk, Russia
²Federal State Unitary Enterprise “Mayak Production Association” State Enterprise “Rosatom”,
Ozersk, Russia
- 1-5 15⁵⁰ **4D ARCHITECTURE AND CUMULATION LAWS
 OF ELECTRONS DE BROYLE WAVES IN STRUCTURES
WITH DIMENSIONS FROM 10⁻¹⁵ TO 10²⁶ m**
Philip I. Vysikaylo
Moscow State Regional University, Moscow, Russia
- 16¹⁰ *Coffee-break*

- 1-23 16³⁰ **REGISTRATION OF A CLOUD OF TUNGSTEN MICROPARTICLES BY SYNCHROTRON RADIOGRAPHY AND PDV**
 Konstantin A. Ten^{1,3}, E. R. Prueel¹, I. A. Rubtsov^{1,2}, A. O. Kashkarov¹,
 V. P. Khalemenchuk^{1,2}, A. A. Studennikov^{1,2}, L. I. Shekhtman³, B. P. Tolochko^{3,4},
 A. Yu. Garmashev⁵, D. P. Kuchko⁵, D. V. Petrov⁵, E. B. Smirnov⁵, A. Yu. Fedorov⁵
¹Institute of Hydrodynamics M. A. Lavrentiev SB RAS, Novosibirsk, Russia
²TsKP “SKIF”, Institute of Catalysis G. K. Boreskov SB RAS, Koltsovo, Russia
³Institute of Nuclear Physics G. I. Budker SB RAS, Novosibirsk, Russia
⁴Institute of Solid State Chemistry and Mechanochemistry, Siberian Branch, Russian Academy of Sciences, Novosibirsk, Russia
⁵FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 1-10 17⁵⁰ **PECULIARITIES OF THE SUBSTANCE EJECTION PROCESS DURING TWO-WAVE LOADING OF A LEAD SAMPLE**
 Dmitriy N. Zamyslov, T. A. Adigamova, M. V. Antipov, N. V. Vaslyaev,
 A. B. Georgievskaya, M. O. Lebedeva, K. N. Panov, D. A. Polshkov, A. S. Sokolova,
 B. I. Tkachenko, E. A. Chudakov, I. V. Yurtov, A. O. Yagovkin, A. P. Yavtushenko
 FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”,
 Institute of Experimental Gas Dynamics and Explosion Physics, Sarov, Russia
- 1-26 17¹⁰ **REGISTRATION OF THE DENSITY AND VELOCITY OF THE DUST FLOW DURING SHOCK LOADING OF STRUCTURAL JOINTS**
 Vyacheslav P. Halemenchuk¹, K. A. Ten¹, I. A. Rubtsov^{1,3}, E. R. Prueel¹,
 A. O. Kashkarov¹, A. A. Studennikov^{1,3}, L. I. Shekhtman², B. P. Tolochko⁴,
 E. B. Smirnov⁵, M. Y. Stolbikov⁵
¹Lavrentiev Institute of Hydrodynamics SB RAS, Novosibirsk, Russia
²Budker Institute of Nuclear Physics SB RAS, Novosibirsk, Russia
³Center for Collective Use “Siberian Ring Photon Source”, Koltsovo, Russia
⁴Institute of Solid State Chemistry and Mechanochemistry SB RAS, Novosibirsk, Russia
⁵FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 1-18 17³⁰

**Section 1 SPACE PROTECTION OF THE EARTH,
HIGH-INTENSITY PROCESSES AND TURBULENCE**

MAY 30, TUESDAY

Morning session

Hall 2

Co-chairs: Alexey E. Kheifets,
Alexander K. Muzyrya

Presentations

- 1-4 9⁰⁰ **EFFECT OF HE POWER ON OPTIMAL PARAMETERS
OF SHAPED CHARGE LINER**
Marina A. Vlasova, O. V. Svirskiy
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”,
Sarov, Russia
- 1-20 9²⁰ **ROTATION OF A STABLE SHAPED-CHARGE JETS FROM TEXTURED LINERS**
Alexander S. Pirozerskiy, V. G. Smelikov, A. N. Loshkarev
JSC «Scientific production association «Bazalt», Moscow, Russia
- 1-22 9⁴⁰ **JOUL HEATING OF A SHAPED-CHARGE JET PRODUCED
BY THE COLLAPSE OF A CONICAL METAL LINER IN A MAGNETIC FIELD**
 Sergey V. Stankevich
Lavrent’ev Institute of Hydrodynamics, Siberian Branch, Russian Academy of Sciences, Novosibirsk,
Russia
Novosibirsk State Technical University, Novosibirsk, Russia
- 1-25 10⁰⁰ **CRITICAL BEHAVIOR OF METALS, ACTINIDES AND PLUTONIUM METAL
ON HIGH-INTENSITY EXPOSURE**
Alexander Ya. Uchaev, N. I. Sel’chenkova, I. R. Trunin
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”,
Sarov, Russia
- 1-13 10²⁰ **THE EFFECT OF GAPS ON THE DYNAMICS OF TWO-LAYER PLATE
ACCELERATION**
Alexander V. Krasilnikov, V. N. Nogin, A. E. Kovalyov,
A. V. Olkhovsky, N. S. Zhilyaeva
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical
Physics”, Snezhinsk, Russia
- 10⁴⁵ *Coffee-break*

Co-chairs: Igor V. Glazyrin,
Alexander A. Tyaktev

- 1-1 11¹⁵ **MODELING OF TURBULENT MIXING INDUCED
BY HYDRODYNAMIC INSTABILITIES**
 Meng-Juan Xiao¹, H.-S. Xie², Y.-S. Zhang^{1,2}
¹Institute of Applied Physics and Computational Mathematics, Beijing, China
²Center for Applied Physics and Technology, HEDPS, and College of Engineering, Peking University,
Beijing, China

- 1-11 11⁴⁵ Simulation of turbulence in industrial applications
A. S. Kozelkov
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”,
Sarov, Russia
NNSTU n.a. R. E. Alekseev, Nizhniy Novgorod, Russia
- 12⁰⁵ **DIRECT NUMERICAL SIMULATION
OF THE TURBULENT MIXING OF MATTERS**
Yuri V. Yanilkin
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”,
Sarov, Russia
- 1-14 12²⁵ **USE OF PARTIALLY AVERAGED NAVIE–STOKES EQUATIONS
FOR MODELING TURBULENT FLOWS**
Pavel A. Kuchugov, V. F. Tishkin
Keldysh Institute of Applied Mathematics of the Russian Academy of Sciences, Moscow, Russia
- 1-28 12⁴⁵ **CFD MODELING OF STRATIFICATION CREATION
AND EROSION PROCESSES USING EDDY-RESOLVING APPROACH
FOR TURBULENCE MODELING**
Anton A. Kanaev
Nuclear Safety Institute of the Russia Academy of Sciences (IBRAE), Moscow, Russia
- 13⁰⁰ *Lunch*

**Section 1P SPACE PROTECTION OF THE EARTH,
HIGH-INTENSITY PROCESSES AND TURBULENCE**

MAY 29, MONDAY 14³⁰ TO 18⁰⁰

MAY 30, TUESDAY 8⁴⁰ TO 13⁰⁰

Foyer

Posters

1-2 PROPAGATION OF A STRONG SHOCK WAVE IN FOAM

Artur M. Asylkaev^{1,2}, K. A. Ten^{1,3}, E. R. Prueel², I. A. Rubtsov^{2,5}, A. O. Kashkarov²,
V. P. Khalemenchuk^{2,5}, A. A. Studennikov^{2,5}, E. B. Smirnov⁶, A. K. Muzyrya⁴,
K. M. Prosvirnin⁶, I. G. Galiulin⁶

¹Novosibirsk State University, Novosibirsk, Russia

²Lavrentiev Institute of Hydrodynamics SB RAS, Novosibirsk, Russia

³Budker Institute of Nuclear Physics, Novosibirsk, Russia

⁴Institute of Solid State Chemistry and Mechanochemistry SB RAS, Novosibirsk, Russia

⁵CCU "SKIF", G.K. Borekov Institute of Catalysis SB RAS, Novosibirsk, Russia

⁶FSUE "Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics",
Snezhinsk, Russia

**ЧИСЛЕННОЕ МОДЕЛИРОВАНИЕ ТУРБУЛЕНТНОГО ПЕРЕМЕШИВАНИЯ
ПРИ СФЕРИЧЕСКОМ СЖАТИИ**

Igor V. Glazyrin

FSUE "Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics",
Snezhinsk, Russia

**1-7 SIMULATION OF HYDRODYNAMIC INSTABILITIES AND MIXING
IN DIRECT-DRIVE ICF TARGETS BY TIGR-3T AND OMEGA-3T CODES**

Dmitry V. Dembovsky, V. A. Lykov, L. V. Sokolov, D. V. Khimich, A. N. Shushlebin

FSUE "Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics",
Snezhinsk, Russia

1-8 STABILITY OF A LAYER OF FLUID WITH HEAVY IMPURITY

O. N. Dementev

Chelyabinsk State University, Chelyabinsk, Russia

1-9 LASER OPTICAL METHODS TO CONTROL HIGH-RATE GAS DYNAMIC PROCESSES

Igor V. Zaytsev, Yu. D. Arapov, A. E. Dormidonov, V. G. Kamenev, V. N. Turkin, A. A. Tikhov,
P. V. Kubasov, A. S. Bychkov, P. N. Yaroshchuk, A. A. Tavleev, N. A. Kuzmin

FSUE "Dukhov Automatic Research Institute", Moscow, Russia

1-15 EXPLOSIVE THROWING OF DISCRETE MASSES

Alexander K. Muzyrya

FSUE "Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics",
Snezhinsk, Russia

1-16 SULPHUR IMPULSIVE PRESSURE SENSOR

Alexander K. Muzyrya

FSUE "Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics",
Snezhinsk, Russia

1-17 **SPHERICAL SHELL IMPACTED BY INTERNAL EXPLOSION**

Alexander K. Muzyrya

FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”,
Snezhinsk, Russia

1-19 **PROPER INSTABILITY OF THE BOUNDARY OF THE CYLINDRICAL CAVITY**

Gennady V. Orlov

FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”,
Snezhinsk, Russia

1-24 **EXPERIMENTAL STUDY OF RICHTMYER–MESHKOV INSTABILITY
AT THE INCIDENT SHOCK-WAVE MACH NUMBER $M \approx 5$**

Alexander A. Tyaktev, Yu. A. Piskunov, I. L. Bugaenko, Y. S. Morozov, N. B. Anikin

FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”,
Snezhinsk, Russia

Section 2 EXPLOSION AND DETONATION PHENOMENA**MAY 30, TUESDAY****Afternoon session**

Hall 1

Co-chairs: Georgy G. Savenkov,
Alexey L. Zherebtsov*Presentations*

- 2-1 14³⁰ **IGNITION AND GROWTH MODELING
OF PLANE WAVE SHOCK INITIATION EXPERIMENTS
ON ULTRAFINE HEXANITROSTILBENE (HNS-IV)**
 Wei Cao, Wei Guo, Sha Yang, Qingguan Song, Bing Huang, Yong Han
Institute of Chemical Materials, China Academy of Engineering Physics, Mianyang, China
- 2-60 14⁵⁰ **CHARACTERISTICS OF DETONATION WAVE'S PROPAGATION
IN CHANNELS OF A SMALL CROSS-SECTION FOR PETN-BASED COMPOUND**
Mariya O. Shirshova, V. B. Titova, N. A. Volodina
FSUE "Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics",
Sarov, Russia
- 2-47 15¹⁰ **NUMERICAL INVESTIGATION OF THE GAS DETONATION PROPAGATION
IN THE PLANE RECTANGULAR CHANNEL WITH OBSTACLES**
Valentin M. Temerbekov, D. A. Tropin
Khristianovich Institute of Theoretical and Applied Mechanics SB RAS, Novosibirsk, Russia
- 2-20 15³⁰ **NUMERICAL SIMULATION OF HETEROGENEOUS DETONATION
INTERACTION WITH FINITE LENGTH POROUS INSERTS WITH**
Sergey A. Lavruk, D. A. Tropin
Khristianovich Institute of Theoretical and Applied Mechanics SB RAS, Novosibirsk, Russia
- 2-51 15⁵⁰ **INTERACTION OF CELLULAR DETONATION IN HYDROGEN–AIR
AND HYDROGEN–OXYGEN–ARGON MIXTURES WITH INERT FILTERS**
Dmitry A. Tropin, K. A. Vyshegorodcev
Khristianovich institute of theoretical and applied mechanics, Siberian Branch of Russian Academy of
Sciences, Novosibirsk, Russia
- 16⁰⁰ *Coffee-break*
- 2-28 16³⁰ **METHODOLOGY FOR DETERMINING THE CHEMISTRY AND KINETICS
OF TRANSIENT STATES FOR FAST-FLOWING CHEMICAL PROCESSES**
Alexander V. Stankevich
FSUE "Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical
Physics", Snezhinsk, Russia
- 2-13 16⁵⁰ **DYNAMIC PHENOMENA IN GAS DETONATION PROPAGATION
IN NONUNIFORM MEDIA**
Aslan R. Kasimov, A. Yu. Goldin
Skolkovo Institute of Science and Technology, Moscow, Russia

- 2-22 17¹⁰ **THE USE OF A NOZZLE INSTALLATION FOR STUDYING THE PECULIARITIES OF COMBUSTION OF HIGH-DENSITY PROPELLANTS**
Konstantin S. Rogaev, A. S. D'yachkovskij, A. N. Ishhenko, N. M. Samorokova,
E. Yu. Stepanov, A. D. Sidorov
National research Tomsk State University, Russian Federation, Tomsk, Russia
- 2-57 17³⁰ **EFFECT OF ADDITIVE ALUMINUM PARTICLES ON THE DETONATION CHARACTERISTICS OF HYDROGEN-OXYGEN MIXTURES**
Tatyana A. Khmel
Khristianovich Institute of Theoretical and Applied Mechanics SD RAS, Novosibirsk, Russia
- 2-4 17⁵⁰ **WEAKENING OF THE PROPELLING CAPACITY OF AN HE BY MEANS OF A GRANULAR ATTENUATOR**
Sergey V. Balushkin, A. Yu. Simonov, G. V. Kulikov, M. V. Nikiforov
FSUE "Russian Federal Nuclear Center – Zababakhin All-Russia Research Institute of Technical Physics", Snezhinsk, Russia

Section 2 EXPLOSION AND DETONATION PHENOMENA

MAY 31, WEDNESDAY

Morning session

Hall 1

Co-chairs: Konstantin A. Ten,
Evgeny B. Smirnov

Presentations

- 2-26 9⁰⁰ **STUDY OF THE EFFECT OF ADDING CARBON NANOTUBES ON THE SENSITIVITY OF A LOW-DENSITY TNT CHARGE**

 Natalya P. Satonkina^{1,2}, A. P. Ershov¹, A. O. Kashkarov¹, I. A. Rubtsov¹, A. A. Kuzminykh², S. S. Pudova², M. S. Terekhova²
¹Institute of Hydrodynamics, M. A. Lavrentiev SB RAS, Novosibirsk, Russia
²Novosibirsk State University, Novosibirsk, Russia
- 2-9 9²⁰ **INITIATION OF LOW-DENSITY MIXTURES OF PETN AND NANODISPERSED ALUMINUM BY NANOSECOND LASER PULSES**
 Artyom G. Gluschenko, M. S. Surov, A. R. Bakirov, V. I. Sdobnov, A. V. Stankevich, A. Yu. Garmashev, D. V. Frolov, D. A. Gribanov, S. M. Dolgikh, D. V. Petrov
 FSUE “Russian Federal Nuclear Center – Zababakhin All-Russia Research Institute of Technical Physics”, Snezhinsk, Russia
- 2-16 9⁴⁰ **DECOMPOSITION OF PLASTICIZED OCTOGEN BEHIND THE SHOCK WAVE FRONT**
 Alexander M. Klimov, K. N. Panov, M. E. Shavrin
 FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”, Institute of Experimental Gas Dynamics and Explosion Physics, Sarov, Russia
- 2-27 10⁰⁰ **MECHANISM AND KINETICS OF THE β - α POLYMORPHIC TRANSITION IN 2,4-DINITROANISOLE**
 Alexander V. Stankevich^{1,2}, N. A. Rasputin², A. Kh. Rudina¹, V. I. Filyakova², G. L. Rusinov², V. N. Charushin²
¹FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
²I. Ya. Postovsky Institute of Organic Synthesis, UB RAS, Yekaterinburg, Russia
- 2-3 10¹⁵ **APPLICATION OF THERMAL ANALYSIS METHODS TO DETERMINE THE STABILITY OF EXPLOSIVES**
 Marat F. Akhmetov
 Branch of Melytec LLC, Yekaterinburg, Russia
- 2-61 10³⁰ **SYNCHROTRON RADIATION METHODS FOR REGISTRATION OF TRANSIENT PROCESS OF TATB INITIATION THROUGH AN DENSE BARRIER**
 Alexey A. Studennikov^{1,2}, I. A. Rubtsov^{1,2}, E. R. Prueel², K. A. Ten², A. O. Kashkarov², V. P. Xalemenchuk², A. K. Myzirya³, E. B. Smirnov³, K. M. Prosvirnin³, I. G. Galiullin³, K. V. Eganov³, A. S. Gremitskich³
¹Synchrotron radiation facility SKIF, Boreskov Institute of Catalysis SB RAS, Novosibirsk, Russia
²Lavrentyev Institute of Hydrodynamics SB RAS, Novosibirsk, Russia
³FSUE “Russian Federal Nuclear Center – Zababakhin All-Russia Research Institute of Technical Physics”, Snezhinsk, Russia
- 10⁴⁵ *Coffee-break*

- 2-14 11¹⁵ **DETONATION SYNTHESIS OF PALLADIUM NANOPARTICLES AND THEIR APPLICATION IN TASKS OF CATALYSIS**
Alexey O. Kashkarov¹, E. Y. Gerasimov², B. L. Moroz², D. A. Bulushev², F. S. Golub², E. R. Prueel¹, N. A. Khlebanovskii³
¹Lavrentyev Institute of Hydrodynamics, SB RAS, Novosibirsk, Russia
²Boreskov Institute of Catalysis, SB RAS, Novosibirsk, Russia
³Novosibirsk State University, Novosibirsk, Russia
- 4-62 11³⁵ **THE REACTIVITY OF BORON MODIFIED BY VANADIUM PENTOXIDE**
Vladimir G. Shevchenko, V. N. Krasilnikov, A. V. Konyukova, D. A. Eselevich
Institute of Solid State Chemistry UB RAS, Ekaterinburg, Russia
- 2-24 11⁵⁵ **ENERGY-SATURATED COMPOSITES BASED ON NANOSTRUCTURED POROUS SILICON**
Georgy G. Savenkov^{1, 2, 3}, U. M. Poberezhnaya^{1, 3}, V. M. Freiman¹, A. G. Zegrya¹, A. A. Karpova¹, D. V. Fadeev⁴, G. G. Zegrya¹
¹Ioffe Institute, St. Petersburg, Russia
²Machine-Building Plant "Armalit", St. Petersburg, Russia
³St. Petersburg State Technological Institute (Technical University), St. Petersburg, Russia
⁴Murom Device-Making Plant, Murom, Russia
- 2-53 12¹⁵ **CONTROL OF THE COMBUSTION PROCESS OF COMBUSTIBLE PRODUCT FOR MORTAR AND ARTILLERY SHOTS IN COMBUSTIBLE CARTRIDGE CASES**
Rustam V. Fataliev, S. V. Soldatov, A. Yu. Osipova, T. A. Eneikina, R. F. Gatin, M. Yu. Mikhailov
Research Institute of Chemical Products Federal State Enterprise, Kazan, Russia
- 2-55 12³⁵ **DESIGN-EXPERIMENT DETERMINATION OF THE PRESSURE OF HEXOGEN EXPLOSION PRODUCTS AS APPLIED TO THE DESIGN OF THE PROTECTIVE MAKE SWITCH OF POWER SUPPLY SYSTEMS OF UNIQUE ELECTROPHYSICAL INSTALLATIONS**
Vadim V. Kharchenko, D. I. Alekseev, M. V. Manzuk, A. N. Pauchenko
Joint Stock Company "D.V. Efremov Institute of Electrophysical Apparatus", St. Petersburg, Russia
- 13⁰⁰ *Lunch*

Section 2P

EXPLOSION AND DETONATION PHENOMENA

MAY 30, TUESDAY 14³⁰ TO 18⁰⁰
MAY 31, WEDNESDAY 8⁴⁰ TO 13⁰⁰

Foyer

Posters

- 2-25 **THE USE OF PHTHALATE-FREE PLASTICIZERS IN THE DEVELOPMENT OF PLASTIC ENERGETIC MATERIAL FOR INDUSTRIAL USE**
 Anatoly S. Salnikov¹, A. S. Kyrzhov¹, N. I. Salnikova¹, E. A. Borisova¹, D. A. Borisov¹, P. V. Kochnev²
¹Kazan National Research Technological University, Kazan, Russian
²Design Institute “Soyuzkhimpromproekt”, Kazan, Russian
- 2-59 **DETERMINATION OF DETONATION PARAMETERS FOR THIN LAYERS OF PLASTIC HIGH EXPLOSIVES**
Semyon V. Shakhmaev, D. M. Gagarkin, K. V. Eganov, A. V. Klepinin, R. N. Latypov, A. V. Sarafannikov, E. B. Smirnov
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russia Research Institute of Technical Physics”, Snezhinsk, Russia
- 2-58 **NEW DIFLUORAMIN-CONTAINING FURAZAN DERIVATIVES: SYNTHESIS AND EVALUATION OF ENERGY PROPERTIES**
Dmitry L. Chizhov¹, Yu. A. Kvasnin¹, A. V. Stankevich², P. A. Slepukhin¹, G. L. Rusinov¹, V. N. Charushin¹
¹Postovsky Institute of Organic Synthesis, Ural Branch of the RAS, Yekaterinburg, Russia
²Federal State Unitary Enterprise «Russian Federal Nuclear Center – Zababakhin АИД – Russia Research Institute of technical Physics
- 2-56 **REGISTRATION OF DETONATION SYNTHESIS OF METAL NANOPARTICLES BY X-RAY AND MICROSCOPIC METHODS**
Nikolay A. Khlebanovsky¹, A. O. Kashkarov², K. A. Ten², E. Y. Gerasimov³, B. L. Moroz³
¹Novosibirsk State University, Novosibirsk, Russia
²Lavrentyev Institute of Hydrodynamics, SB RAS, Novosibirsk, Russia
³Borshkov Institute of Catalysis, SB RAS, Novosibirsk, Russia
- 2-54 **SHOCK-WAVE PRESSURE AND PRESSURE PULSE MEASUREMENTS USING A MEMBRANE CRUSHER**
Karim V. Khairtdenov, E. B. Smirnov, A. V. Sarafannikov, K. M. Prosvirnin, I. G. Galiullin
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russia Research Institute of Technical Physics”, Snezhinsk, Russia
- 2-52 **DETERMINATION OF TNT DETONATION PARAMETERS USING PHOTON DOPPLER VELOCIMETRY**
Alexander S. Tumanik, K. A. Ten, E. R. Pruehl, N. P. Satonkina
Lavrentyev Institute of Hydrodynamics of the Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Russia

- 2-50 **INVESTIGATION OF THE POSSIBILITY OF OBTAINING SYNCHROTRON RADIATION BEAMS WITH A NANOSIZED CROSS SECTION FOR STUDYING THE STRUCTURE OF THE DETONATION FRONT AT THE SKIF PHOTON SOURCE: MODEL EXPERIMENT AT VEPP-4 USING REFRACTIVE X-RAY LENSES**
 Boris P. Tolochko^{3,4}, N. I. Razumov^{3,4}, V. P. Nazmov³, K. A. Ten^{1,3}, E. R. Prueel¹, I. A. Rubtsov^{1,2}, L. I. Shekhtman³, A. Yu. Garmashev⁵, D. V. Petrov⁵, E. B. Smirnov⁵
¹Institute of Hydrodynamics, M. A. Lavrentiev SB RAS, Novosibirsk, Russia
²TsKP "SKIF", Institute of Catalysis. G. K. Boreskov SB RAS, Koltsovo, Russia
³Institute of Nuclear Physics, G. I. Budker SB RAS, Novosibirsk, Russia
⁴Institute of Solid State Chemistry and Mechanochemistry, Siberian Branch, Russian Academy of Sciences, Novosibirsk, Russia
⁵Federal State Unitary Enterprise "Russian Federal Nuclear Center – All-Russian Scientific Research Institute of Technical Physics named after Academician. E. I. Zababakhina", Snezhinsk, Russia
- 2-49 **PROVING THE EQUATION OF STATE FOR THE EXPLOSION PRODUCTS OF PLASTICIZED HMX USING THE EXPERIMENTAL RESULTS ON LINERS ACCELERATION**
 Viktoriya B. Titova¹, N. A. Volodina¹, M. O. Shirshova¹, M. N. Kiryuhina¹, E. N. Bogdanov², A. A. Stanovov²
¹FSUE "Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics", ITMP, Sarov, Russia
²FSUE "Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics", IPE, Sarov, Russia
- 2-48 **INVESTIGATION OF DETONATION PROPAGATION IN TATB- AND HMX-BASED WEDGE EXPLOSIVE SAMPLES**
 Alexander E. Teplyakov, A. Yu. Garmashev, E. B. Smirnov, A. V. Sarafannikov, K. M. Prosvirnin, I. G. Galiullin
 FSUE "Russian Federal Nuclear Center – Zababakhin All-Russia Research Institute of Technical Physics", Snezhinsk, Russia
- 2-46 **ULTRASONIC TREATMENT OF THE INDIVIDUAL NITRAMINE-EXPLOSIVE CRYSTALS AND ITS EFFECT ON THE DETONATION PROPERTIES**
 Alexander Yu. Tarasov, E. B. Smirnov, A. V. Sarafannikov, N. A. Alekhina, A. N. Filimonenko, D. P. Dudnik, V. N. Dunaev
 FSUE "Russian Federal Nuclear Center – Zababakhin All-Russia Research Institute of Technical Physics", Snezhinsk, Russia
- 2-43 **HMX DECOMPOSITION IN LIQUID AND GASEOUS PHASE**
 Pavel N. Stolyarov, J. A. Misyurin, S. A. Atyasov, A. A. Kosterova
 Central Research Institute Of Chemistry And Mechanics, Moscow, Russia
- 2-42 **HMX DECOMPOSITION UNDER CONTANT PRESSURE CONDITIONS**
 Pavel N. Stolyarov, J. A. Misyurin, A. A. Kosterova, W. N. Alfimov
 Central research institute of chemistry and mechanics, Moscow, Russia
- 2-29 **TENSORS OF THERMAL DEFORMATION FOR VARIOUS POLYMORPHIC MODIFICATIONS OF 2,4-DINITROANISOLE**
 Alexander V. Stankevich^{1,2}, N. A. Rasputin², A. Kh. Rudina¹, V. I. Filyakova², G. L. Rusinov², V. N. Charushin²
¹FSUE "Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics", Snezhinsk, Russia
²I. Ya. Postovsky Institute of Organic Synthesis, Ural Branch of the Russian Academy of Sciences, Yekaterinburg, Russia

SECTION 2

- 2-30 **THERMAL STRAIN TENSORS FOR α -MODIFICATION OF ULTRAPURE MOLECULAR CRYSTALS OF 3-NITRO-1,2,4-TRIAZOLE-5-ONE**
Alexander V. Stankevich, D. M. Gagarkin
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 2-31 **TENSORS OF THERMAL DEFORMATION OF ULTRAPURE MOLECULAR CRYSTALS γ AND δ 1,1-DIAMINO-2,2-DINITROETHYLENE**
Alexander V. Stankevich
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 2-32 **CHEMICAL COMPATIBILITY AND MECHANISM OF INTERACTION OF COMPONENTS FOR MIXTURES OF PHOTOSENSITIVE EXPLOSIVES BASED ON PETN UNDER THERMAL EXPOSURE**
Alexander V. Stankevich, A. R. Bakirov, I. V. Chemagina
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 2-33 **KINETICS AND MECHANISM OF CHEMICAL REACTIONS OF COBALT (III) FLUORIDE INTERACTION WITH CARBON**
Alexander V. Stankevich, A. Kh. Rudina, I. V. Chemagina
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 2-34 **KINETICS OF SUBLIMATION FOR ULTRAPURE MOLECULAR CRYSTALS OF ENERGETIC COMPOUNDS**
Alexander V. Stankevich
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 2-35 **NUMERICAL SIMULATION FOR GAS-DYNAMIC PROCESSES IN COAXIALLY-LAYERED COMBINED PRODUCTS MADE OF VARIOUS TYPES OF ENERGETIC MATERIALS**
Alexander V. Stankevich, D. V. Petrov
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 2-36 **MECHANISM OF FORMATION OF VARIOUS FORMS OF CARBON NITRIDE IN THE WAVE OF COMBUSTION AND DETONATION**
Alexander V. Stankevich^{1,2}, S. G. Tolshchina², A. V. Korotina², G. L. Rusinov²
¹FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
²I. Ya. Postovsky Institute of Organic Synthesis, UB RAS, Yekaterinburg, Russia
- 2-37 **ISSUES OF STABILITY OF PRODUCTS FOR FAST-FLOWING BORON, SILICON AND CARBON FLUORINATION REACTIONS**
Alexander V. Stankevich
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia

- 2-38 **KINETICS OF OXIDATION OF MECHANICALLY ACTIVATED ALUMINUM INTERMETALLIDES**
Alexander V. Stankevich¹, M. A. Uymin², A. E. Ermakov², I. V. Chemagina², S. I. Novikov²
¹FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
²Institute of Metal Physics, Ural Branch of the Russian Academy of Sciences, Yekaterinburg, Russia
- 2-39 **SYNTHESIS AND PHYSICO-CHEMICAL PROPERTIES OF 3-NITRO-4,5-DIHYDRO-1,2,4-TRIAZOL-5-ONE SALTS**
Alexander V. Stankevich^{1,2}, D. S. Yachevsky¹, G. L. Rusinov¹, I. V. Chemagina², V. N. Charushin¹
¹FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
²I. Ya. Postovsky Institute of Organic Synthesis, Ural Branch of the Russian Academy of Sciences, Yekaterinburg, Russia
- 2-40 **SYNTHESIS AND THERMAL STABILITY OF SOME POLY-NITROGEN-CONTAINING DERIVATIVES OF [1,2,4]TRIAZOLO[4,3-B][1,2,4,5]TETRAZINE**
Alexander V. Stankevich^{1,2}, S. G. Tolshchina¹, A. V. Korotina¹, R. I. Ishmetova¹, I. V. Chemagina², G. L. Rusinov¹, V. N. Charushin¹
¹FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
²I. Ya. Postovsky Institute of Organic Synthesis, UB RAS, Yekaterinburg, Russia
- 2-41 **STRUCTURE AND ELECTRONIC PROPERTIES FOR 1-(DIFLUOROAMINO) DINITROMETHYL-3,4-DINITRO-1H-PYRAZOLE**
Alexander V. Stankevich², K. Yu. Suponitskiy¹, T. K. Shkineva¹, I. L. Dalinger¹
¹N. D. Zelinsky Institute of Organic Chemistry, RAS, Moscow, Russia
²FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 2-23 **APPLICATION OF THE TECHNIQUE OF SMALL-ANGLE X-RAY SCATTERING IN THE STUDY OF FAST-FLOWING PROCESSES**
Ivan A. Rubtsov^{1,2}, K. A. Ten², E. R. Pruel², A. O. Kashkarov², A. A. Studennikov^{1,2}, V. P. Khalemenchuk², Ya. V. Zubavichus¹, K. E. Kuper¹, A. V. Bukhtiyarov¹, B. P. Tolochko³
¹Lavrentyev Institute of Hydrodynamics, SB RAS, Novosibirsk, Russia
²SRF “SKIF” Boreskov Institute of Catalysis, SB RAS, Kol'tsovo, Russia
³Institute of Solid State Chemistry and Mechanochemistry, Novosibirsk, Russia
- 2-21 **STUDY OF THE FUNCTIONAL CHARACTERISTICS OF ENERGYSATURATED MATERIAL INTENDED FOR GAS-DYNAMIC FRACTURING OF OIL RESERVOIR**
Alexander A. Lachugin, A. A. Marsov, A. S. Petrov, A. A. Mokeev, Ya. O. Pavlova
Kazan National Research Technological University, Kazan, Russia
- 2-45 **EVAPORATION OF HEATED 2,4-DINITROANISOLE AND INFLUENCE OF MELT COOLING RATE ON THE OBTAINED POLYMORPHIC MODIFICATION**
Alexander Yu. Tarasov, E. B. Smirnov, A. V. Sarafannikov, K. A. Gaisina, A. V. Sobolevskaya, I. V. Chemagina
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia

SECTION 2

- 2-18 **HMX DECOMPOSITION MODEL UNDER DYNAMIC HEATING CONDITIONS**
Dmitry A. Kosterov, P. N. Stolyarov, J. A. Misyurin, M. M. Zhukova
Central research institute of chemistry and mechanics, Moscow, Russia
- 2-17 **STUDY OF THE DETONATION WAVE TURNING IN INSENSITIVE HE SAMPLES**
Alexander E. Klischenko, E. B. Smirnov, A. V. Sarafannkov, K. M. Prosvirnin, I. G. Galiullin,
K. M. Miroshkin, M. M. Bannikov
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”,
Snezhinsk, Russia
- 2-15 **INVESTIGATION OF SOME PROPERTIES
OF LONG-STORED BENZOTRIFUROXANE-BASED PLASTIC HE**
Alexander V. Klepinin, D. M. Gagarkin, D. P. Dudnik, A. V. Sarafannikov, E. B. Smirnov,
A. Yu. Garmashev, S. V. Shakhmaev, K. M. Prosvirnin, I. V. Chemagina
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russia Research Institute of Technical Physics”,
Snezhinsk, Russia
- 2-12 **HMX PHASE TRANSITIONS**
Alexander S. Emelyanov, P. N. Stolyarov, J. A. Misyurin, S. A. Atyasov
Central research institute of chemistry and mechanics, Moscow, Russia
- 2-44 **EFFECT OF ULTRASONIC TREATMENT ON PHYSICAL
AND CHEMICAL CHARACTERISTICS OF CRYSTALS
OF INDIVIDUAL HIGHLY EXPLOSIVE NITRO AROMATIC COMPOUND**
Alexander Yu. Tarasov, E. B. Smirnov, A. V. Sarafannikov, N. A. Alekhina, A. N. Filimonenko
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russia Research Institute of Technical Physics”,
Snezhinsk, Russia
- 2-11 **FEATURES OF HMX DECOMPOSITION UNDER CONTANT VOLUME CONDITIONS**
Alexander S. Emelyanov, P. N. Stolyarov, J. A. Misyurin, O. N. Kozlova
Central research institute of chemistry and mechanics, Moscow, Russia
- 2-10 **THE RADIO-WAVE RECORDING METHOD TO ESTIMATE RELATIVE DRIVING
CAPABILITY OF HIGH EXPLOSIVES**
Grigory A. Grebyonkin, E. B. Smirnov, A. V. Sarafannikov, K. M. Prosvirnin, I. G. Galiullin,
I. A. Akhlyustin, K. V. Eganov, K. M. Miroshkin, A. S. Gremitskikh
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russia Research Institute of Technical Physics”,
Snezhinsk, Russia
- 2-7 **STUDYING THE PROPERTIES OF INSENSITIVE PLASTISOL HE
WITH ENHANCED DETONABILITY**
Dmitry M. Gagarkin, D. P. Dudnik, A. V. Sarafannikov, E. B. Smirnov, A. Yu. Garmashev,
K. M. Prosvirnin, K. M. Miroshkin, A. I. Akhmetzyanov, I. A. Batalova,
K. V. Eganov, A. S. Gremitskih
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russia Research Institute of Technical Physics”,
Snezhinsk, Russia
- 2-8 **STUDY OF PHYSICAL, CHEMICAL, AND EXPLOSIVE PROPERTIES OF NTO**
Dmitry M. Gagarkin, D. P. Dudnik, S. V. Shakhmaev, A. V. Sarafannikov, E. B. Smirnov,
K. V. Kovaleva, K. M. Prosvirnin, Yu. A. Shakhtorin, I. V. Chemagina,
I. A. Makarchev, L. N. Shinkareva
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russia Research Institute of Technical Physics”,
Snezhinsk, Russia

- 2-6 **ANALYSIS OF COMPOSITION OF HMX COMBUSTION GAS PRODUCTS IN AIR AND HELIUM ENVIRONMENTS**
 Kseniya N. Berkutova, A. V. Sarafannikov, A. Yu. Garmashev, N. P. Taibinov, O. V. Khruleva, I. A. Batalova, T. V. Antipova, Yu. A. Shakhtorin
 FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 2-5 **INFLUENCE OF TATB FABRICATION TECHNOLOGY ON ITS SENSITIVITY TO THERMAL AND SHOCK IMPACTS**
 Irina A. Batalova, T. V. Antipova, I. A. Akhlyustin, Yu. A. Belenovskii, A. Yu. Garmashev, A. V. Eganova, I. E. Kosolapov, K. M. Miroshkin, K. M. Prosvirnin, I. V. Chemagina
 FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 2-2 **THE NANOGATE-22/HSC HARDWARE AND SOFTWARE COMPLEX. CALIBRATION, CORRECTION OF DISTORTIONS AND RESULTS OF APPLICATION AS A MEASURING INSTRUMENT OF THE SPATIO-TEMPORAL CHARACTERISTICS OF HIGH SPEED PROCESSES**
 Vladimir A. Arinin², M. I. Krutik¹, B. I. Tkachenko², S. V. Dudin³
¹NANOSCAN Scientific and Production Enterprise Moscow, Russia
²FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”, Sarov, Russia
³Institute of Problems of Chemical Physics of the Russian Academy of Sciences, Chernogolovka, Russia
- 2-19 **DYNAMICS, SYMMETRY AND SHOCK-INDUCED EJECTION AT QUASI-ISENTROPIC AND ISENTROPIC ACCELERATION OF CYLINDRICAL LINERS**
 Evgeny V. Kulakov¹, S. V. Erunov^{1,2}, V. A. Ogorodnikov^{1,2}, A. O. Blikov^{1,2}, V. N. Knyazev¹, A. B. Georgievskaya^{1,2}, N. B. Davydov¹, A. S. Sokolova¹, E. A. Chudakova¹, M. V. Zhernokletov¹, A. V. Romanov¹, A. V. Ryzhkov¹, A. S. Pupkov¹, I. A. Blinov^{1,2}, V. A. Arinin¹, A. V. Kotin¹, V. A. Komrakov¹, M. V. Antipov¹, A. P. Yavtushenko¹
¹Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics, Sarov, Russia.
²R. E. Alexeev Nizhegorodskiy state technical university, Nizhniy Novgorod, Russia
- 2-62 **THE EFFECT OF SENSITIZATION OF HIGH-ENERGY COMPOSITIONS UNDER ELECTROMECHANICAL ACTION**
 L.Kh. Badretdinova, R.M. Vakhidov, A.S. Kurazhov, D.V. Metlyakov
 Federal State Budgetary Educational Institution of Higher Education «Kazan National Research Technological University», Kazan, Russia

Section 3 **DENSE PLASMA PHENOMENA**

MAY 30, TUESDAY

Afternoon session

Hall 3

Co-chairs: Andrey P. Kuznetsov

Presentations

- 3-18 14³⁰ **STUDIES OF MATTER UNDER CONDITIONS OF INTENSE DYNAMIC LOADS UNDER THE INFLUENCE OF HIGH-POWER LASER RADIATION BY INTERFEROMETRIC METHODS WITH SPATIAL RESOLUTION**
Andrey P. Kuznetsov¹, K. L. Gubskii¹, A. V. Mikhaylyuk¹,
V. N. Derkach², P. I. Kononov³
¹National Research Nuclear University MEPhI, Moscow, Russia
²FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”, Sarov, Russia
³Dukhov Automatics Research Institute, Moscow, Russia
- 3-1 14⁴⁵ **EXPERIMENTAL STUDIES OF MATTER EXPANSION RATE UNDER ISOCHORIC HEATING OF FLAT TARGETS BY ULTRASHORT LASER PULSES**
Egor S. Borisov, D. S. Gavrilov, N. Y. Titarenko
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 3-38 15⁰⁰ **EQUATION OF STATE AND TRANSPORT PROPERTIES OF REFRACTORY METALS IN SUPERCRITICAL FLUID STATE**
Alexey S. Shumikhin
Joint Institute for high temperatures of RAS, Moscow, Russia
- 3-21 15¹⁵ **THE INFLUENCE OF ION DYNAMICS EFFECTS ON MULTIELECTRON SPECTRA IN DENSE PLASMA**
Andrey Yu. Letunov^{1,2}, V. S. Lisitsa^{1,3}, P. A. Loboda^{1,2}, A. A. Novikov^{1,2}
¹National Research Nuclear University “MEPhI”, Moscow, Russia
²FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
³National Research Center Kurchatov Institute, Moscow, Russia
- 3-15 15³⁰ **ANOMALOUS THERMODYNAMICS OF ENTROPIC PHASE TRANSITIONS IN MATTER OF EXTREME STATE**
 Igor L. Iosilevskiy^{1,2}, V. K. Gryaznov³, D. N. Nikolaev³, A. V. Shutov³
¹Joint Institute for High Temperatures RAS, Moscow, Russia
²Moscow Institute of Physics and Technology, Dolgoprudny, Russia,
³Institute of Problems of Chemical Physics RAS, Chernogolovka, Russia
- 3-6 15⁴⁵ **TRANSPORT AND OPTICAL PROPERTIES OF IRON IN THE EXPANDED AND COMPRESSED STATES AT HIGH ENERGY DENSITIES**
Nikolay B. Volkov, A. I. Lipchak
Institute of Electrophysics, Ural Branch of Russian Academy of Sciences, Yekaterinburg, Russia
- 16⁰⁰ *Coffee-break*

Co-chairs: Peter A. Loboda,
Pavel R. Levashov

- 3-13 16³⁰ **ANGULAR-AVERAGED EWALD POTENTIAL FOR CALCULATING THERMODYNAMIC PROPERTIES OF A ONE-COMPONENT PLASMA IN A WIDE RANGE OF COUPLING PARAMETER**
Pavel R. Levashov, G. S. Demyanov
Joint Institute for High Temperatures, Moscow, Russia
Institute of Physics and Technology, Dolgoprudny, Moscow Region, Russia
- 3-11 16⁴⁵ **THERMODYNAMIC PROPERTIES OF SHOCK-COMPRESSED NITROGEN IN A WIDE PRESSURE RANGE**
 Viktor K. Gryaznov, I. L. Iosilevsky, A. V. Shutov
Federal Research Center of Problems of Chemical Physics and Medicinal Chemistry RAS, Chernogolovka, Russia
- 3-19 17⁰⁰ **LIQUID METALS AS A STRONGLY COUPLED DEGENERATE PLASMA: THERMOPHYSICAL PROPERTIES AND THE CRITICAL POINT**
Pavel R. Levashov, D. V. Minakov, M. A. Paramonov
Joint Institute for High Temperatures, Moscow, Russia
- 3-25 17¹⁵ **THERMAL PROCESSES IN METAL ELECTRODES UNDER THE INFLUENCE OF A PULSED ELECTRIC DISCHARGE**
 Anastasiya S. Matveeva, V. N. Khaldeev
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”, Sarov, Russia
- 3-5 17³⁰ **VACUUM SPARK WITH LASER INITIATION. DIAGNOSIS AND APPLICATIONS**
Evgeny D. Vovchenko, I. A. Gerasimov, A. P. Melekhov, R. Sh. Ramakoti, K. I. Kozlovskii, A. S. Savjолоv, A. E. Shikanov, E. Ya. Shkolnikov
National Research Nuclear University “MEPhI”, Moscow, Russia
- 3-36 17⁴⁵ **PROSPECTS FOR THE USE OF ULTRA-HIGH-VOLTAGE AC AND DC TEST FACILITIES FOR THE DEVELOPMENT AND IMPROVEMENT OF THE TECHNOLOGY FOR TRANSMITTING ELECTRICAL ENERGY USING ULTRA-HIGH VOLTAGE LINES**
Nikolay N. Shvets, V. S. Sysoev, A. I. Orlov, E. V. Basov, N. M. Lepekhin, M. Yu. Naumova
Federal State Unitary Enterprise “RFNC – VNIITF im. academician E. I. Zababakhina” VNITs 900, Istra, Russia
- 3-22 18⁰⁰ **INVESTIGATION OF THE OPERATION STABILITY OF A HIGH-VOLTAGE SWITCH WITH OPTICAL CONTROL**
Alexander I. Lipchak, N. B. Volkov, I. S. Turmyshev, E. A. Chingina
Institute of Electrophysics, Ural Branch of Russian Academy of Sciences, Yekaterinburg, Russia

Section 3 **DENSE PLASMA PHENOMENA**

MAY 31, WEDNESDAY

Morning session

Hall 3

Co-chairs: Evgeny A. Govras,
Mikhail V. Starodubtsev*Presentations*

- 3-30 9⁰⁰ **LASER ACCELERATOR FOR RADIATION HARDNESS ASSESSMENT OF MICROELECTRONIC DEVICES**
Konstantin V. Safronov, V. A. Flegentov, S. A. Gorokhov, N. N. Shamaeva, D. I. Bashkin, A. S. Tischenko, D. O. Zamuraev, A. L. Shamraev, S. F. Kovaleva, N. A. Fedorov, S. M. Dubrovskikh, A. S. Pilipenko, A. S. Kustov, E. A. Shibakov, A. V. Potapov
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 3-23 9¹⁵ **INFLUENCE OF THE PULSE DURATION IN THE RELATIVISTIC SELF-TRAPPING OF EXTREME LASER LIGHT**
Maxim G. Lobok, O. E. Vais, V. Yu. Bychenkov
Dukhov Research Institute of Automatics (VNIIA), Moscow, Russia
P. N. Lebedev Physics Institute, Russian Academy of Science, Moscow, Russia
- 3-32 9³⁰ **LASER-PLASMA BREMSSTRAHLUNG SOURCE FOR HIGH DENSITY OBJECTS RADIOGRAPHY**
Vladimir A. Flegentov, K. V. Safronov, N. N. Shamaeva, S. A. Gorokhov, E. S. Borisov, D. S. Gavrilov, N. Yu. Titarenko, A. V. Potapov
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 3-26 9⁴⁵ **GENERATION OF THZ RADIATION AND ELECTRON ACCELERATION UNDER IRRADIATION OF SOLID TARGETS BY MULTITERAWATT FEMTOSECOND LASER PULSE**
Maxim M. Nazarov¹, P. A. Shcheglov¹, M. V. Chashchin¹, A. V. Mitrofanov^{1, 3, 4}, D. A. Sidorov–Biryukov^{1, 2, 4}, V. Ya. Panchenko^{1, 2, 3}
¹National Research Center “Kurchatov Institute”, Moscow, Russia
²Physics Faculty of Lomonosov Moscow State University, Moscow, Russia.
³FSRC “Crystallography and Photonics” RAS, Moscow, Russia.
⁴Russian Quantum Center, Moscow, Russia
- 3-3 10⁰⁰ **DIAGNOSIS OF ULTRA-HIGH INTENSITY LASER RADIATION**
Olga E. Vais^{1, 2}, N. D. Bukharskii^{2, 3}, V. Yu. Bychenkov^{1, 2}, Ph. A. Korneev^{2, 3}
¹Federal State Unitary Enterprise Dukhov Automatics Research Institute (VNIIA), Moscow, Russia
²P. N. Lebedev Physical Institute of the Russian Academy of Science, Moscow, Russia
³National Research Nuclear University MEPhI (Moscow Engineering Physics Institute), Moscow, Russia
- 10¹⁵ **HIGH-POWER LASERS FOR HIGH ENERGY DENSITY PHYSICS STUDIES**
Artyom S. Gnutov, V. A. Ustinenko, S. G. Garanin
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”, Sarov, Russia

- 3-7 10³⁰ **GAIN AND LASER BEAM SPATIAL FEATURES INVESTIGATION IN MULTIPASS AMPLIFIER OF THE “SOKOL-3” LASER FACILITY**
Dmitry S. Gavrilov, E. S. Borisov, D. A. Dmitrov, A. G. Kakshin, E. A. Loboda
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 10⁴⁵ *Coffee-break*
- Co-chairs: Semyon I. Glazyrin,
Vladimir M. Gubchenko
- 3-29 11¹⁵ **METHODS OF MANUFACTURING AN INDICATOR LAYER OF A TARGET FOR RESEARCH OF HYDRODYNAMIC INSTABILITIES IN LASER EXPERIMENTS**
Ludmila E. Peshkicheva¹, D. A. Zherebtsov², Yu. Yu. Smirnov¹, E. D. Yusupova¹,
D. A. Vikhlyaev¹, D. S. Nosulenko¹, E. A. Pryakhina¹, A. V. Emelianov¹,
S. D. Devyatkov¹, D. I. Bashkin¹, L. P. Kochegarova¹, M. S. Kolchina¹, N. V. Vasilenko¹
¹FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
²South Ural State University, Chelyabinsk, Russia
- 3-9 11³⁰ **DIRECT DRIVE TARGETS COMPRESSION AND IGNITION SIMULATIONS WITH ACCOUNT FOR HOT ELECTRONS GENERATION**
Semyon I. Glazyrin^{1,2}, A. V. Brantov^{1,2}, M. A. Rakitina²,
K. E. Gorodnichev^{1,2}, V. Yu. Bychenkov^{2,1}
¹Dukhov Research Institute of Automatics, Moscow, Russia
²Lebedev Physics Institute, Russian Academy of Sciences, Moscow, Russia
- 3-10 11⁴⁵ **EXPERIMENTAL SETUP TO STUDY THE EFFECT OF RADIATION TRANSFER ON THE DEVELOPMENT OF HYDRODYNAMIC INSTABILITIES**
Semyon I. Glazyrin^{1,2}, E. M. Urvachev^{1,2}, S. I. Blinnikov^{3,1}
¹Dukhov Research Institute of Automatics, Moscow, Russia
²Lebedev Physics Institute, Russian Academy of Sciences, Moscow, Russia
³NRC Kurchatov Institute, Moscow, Russia
- 3-24 12⁰⁰ **TO A QUESTION ON POSSIBILITY OF THERMONUCLEAR IGNITION OF DIRECT DRIVE TARGETS AT MEGAJOULE FACILITIES WITH LASER LIGHT WAVELENGTHS OF 0.35 MICRONS AND 0.53 MICRONS**
Vladimir A. Lykov, E. S. Bakurkina, D. V. Boretskikh, V. E. Chernyakov,
D. V. Dembovski, N. G. Karlykhanov, G. N. Rykovanov,
L. V. Sokolov, A. N. Shushlebin
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 3-33 12¹⁵ **OPTIMIZATION OF DOUBLE SHELL HYBRID GAS-PUFF WITH OUTER PLASMA SHELL FOR EFFICIENT GENERATION OF K-SHELL RADIATION IN THE MICROSECOND IMPLOSION REGIME**
Rustam K. Cherdizov, A. V. Shishlov, V. A. Kokshenev, N. E. Kurmaev, S. A. Vagaytsev
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 3-2 12³⁰ **RUSSIAN MULTIFRAME QUICK-RESPONSE CMOS PHOTODETECTORS**
Dmitry V. Borodin, Yu. V. Osipov, Yu. A. Barsukov, S. Yu. Volkova
RTC Inpex Ltd, Mytishchi, Russia

SECTION 3

3-12 12⁴⁵ **FARADEY AND WEIBEL DYNAMO IN KINETICS
OF HOT COLLISIONLESS PLASMA EXPANSION**

Vladimir M. Gubchenko

Institute of Applied Physics RAS, Nizhny Novgorod, Russia

13⁰⁰ *Lunch*

Section 3P DENSE PLASMA PHENOMENA

MAY 30, TUESDAY 14³⁰ TO 18⁰⁰
MAY 31, WEDNESDAY 8⁴⁰ TO 13⁰⁰

Foyer

Posters

- 3-4 **THE THERMOS TOOLKIT: CALCULATION OF SPECTRAL AND THERMODYNAMIC PROPERTIES OF PLASMA FOR RHD SIMULATIONS**
Il'ya Yu. Vichev¹, D. A. Kim^{1,2}, A. D. Solomyannaya¹, A. S. Grushin¹
¹Keldysh Institute of Applied Mathematics, Moscow, Russia
²National Research Nuclear University MEPhI, Moscow, Russia
- 4-8 **ENHANCEMENT OF LASER-DRIVEN PROTON ACCELERATION AND GAMMA-RAY PRODUCTION DUE TO PREPLASMA ON THE SURFACE OF SOLID TARGETS**
Oleg N. Gilyov, K. V. Safronov, V. A. Flegentov, N. N. Shamaeva, D. O. Zamuraev, S. A. Gorokhov, A. S. Tischenko, N. A. Fedorov, S. F. Kovaleva, A. V. Potapov
FSUE "Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics", Snezhinsk, Russia
- 3-14 **BREMSSTRAHLUNG SOURCE BASED ON LINEAR INDUCTION ACCELERATOR**
Igor A. Zhuravlev², A. R. Akhmetov², P. A. Bak¹, A. M. Batrakov¹, K. I. Zhivankov¹, P. A. Kolesnikov², P. V. Logachev¹, O. A. Nikitin², D. A. Nikiforov¹, I. V. Penzin², R. V. Protas², A. L. Senchenko¹, D. I. Skovorodin¹, D. V. Siskov², C. D. Khrenkov², V. U. Evert²
¹Budker Institute of Nuclear Physics, Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Russia
²FSUE "Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics", Snezhinsk, Russia
- 3-16 **FINDINGS ON DIAGNOSING THE SIZE OF FOCAL SPOT OF LINEAR-INDUCTION ACCELERATOR**
Peter A. Kolesnikov¹, V. Yu. Politov¹, S. A. Kolesnikov¹, A. R. Akhmetov¹, I. A. Zhuravlev¹, I. V. Penzin¹, V. Yu. Evert¹, A. O. Chernitsa¹, O. A. Nikitin¹, Yu. A. Trunev², D. I. Skovorodin², M. G. Atlukhanov², A. V. Burdakov², V. V. Danilov², V. V. Kurkuchekov², S. S. Popov², K. I. Zhivankov²
¹FSUE "Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics", Snezhinsk, Russia
²BINP, the SB of the RAS, Novosibirsk, Russia
- 3-17 **INVESTIGATION OF THE CROSS-POLARIZED WAVE GENERATION PROCESS FOR INCREASING THE TEMPORAL CONTRAST OF ULTRASHORT LASER PULSES**
Maxim S. Korneev, D. O. Zamuraev
FSUE "Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics", Snezhinsk, Russia
- 3-20 **CURRENT AND VOLTAGE PULSE GENERATOR FOR TESTING ELECTRICAL EQUIPMENT AND PROTECTIVE DEVICES**
Nikolay M. Lepekhin¹, N. N. Shvets¹, V. P. Miroshnichenko¹, A. I. Orlov¹, V. S. Sysoev¹, I. V. Dubov¹, E. V. Basov², Yu. A. Kuznetsov²
¹FSUE "RFNC – VNIITF named after Academ. E. I. Zababakhin" High-Voltage Research Center (RFNC – VNIITF), Istra, Russia
²VEI – branch of FSUE "RFNC – V NIITF named after academ. E. I. Zababakhin", Moscow, Russia

SECTION 3

- 3-27 **SINGLE-FRAME X-RAY IMAGER BASED ON A SPHERICALLY BENT CRYSTAL**
Dmitry S. Nosulenko, E. S. Borisov, D. A. Vikhlyayev, D. S. Gavrilov, S. D. Devyatkov,
A. V. Emelyanov, A. V. Potapov, E. A. Pryakhina, N. Yu. Titarenko, P. A. Tolstoukhov
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”,
Snezhinsk, Russia
- 3-28 **SPECIAL ASPECTS OF THE EMITTING MODULE MANUFACTURE
FOR THE ULTRA-WIDEBAND ELECTROMAGNETIC PULSE GENERATOR**
Ruslan I. Nurtdinov, P. I. Konovalov, D. G. Akopyan, A. Yu. Sokolov, A. S. Dolotov
Dukhov Automatics Research Institute (VNIIA), Federal State Unitary Enterprise, Moscow, Russia
- 3-34 **THE LINEAR INDUCTION ACCELERATOR LIA-2 ELECTRON BEAM
DYNAMICS INVESTIGATION**
Artyom O. Chernitsa¹, P. A. Kolesnikov¹, I. A. Karachinskiy¹, D. A. Starostenko², P. A. Bak²,
D. N. Nikiforov², Ya. V. Kulenko²
¹FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”,
Snezhinsk, Russia
²BINP, the SB of the RAS, Novosibirsk, Russian Federation
- 3-35 **X-RAY AND PARTICLE IMAGES OF REGION LASER-PLASMA INTERACTION
HIGH INTENSITY LASER PULSE WITH A SOLID TARGET
BY THE PINHOLE CAMERA**
Natal’ya N. Shamaeva, K. V. Safronov, V. A. Flegentov, S. A. Gorokhov, D. S. Gavrilov,
E. S. Borisov, A. V. Potapov
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”,
Snezhinsk, Russia
- 3-37 **A HIGH-INTENSITY PORTABLE NEUTRON GENERATOR POWERED
BY A LASER-PLASMA ION DIODE**
Eduard Y. Shkolnikov, D. S. Stepanov, K. I. Kozlovskij, A. P. Skripnik
National Research Nuclear University MEPhI (Moscow Engineering Physics Institute), Moscow, Russia

Section 4 **PROPERTIES OF MATTER AT HIGH-INTENSITY PROCESSES**

MAY 29, MONDAY

Afternoon session

Hall 1

Co-chairs: Alexey A. Rykunov,
Konstantin V. Khishchenko

Presentations

- 4-48 14³⁰ **SOUND VELOCITIES IN METALS UNDER HIGH PRESSURES FROM FIRST-PRINCIPLES CALCULATIONS**
Nikolay A. Smirnov
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 4-3 14⁵⁰ **SEMIEMPIRICAL WIDE-RANGE EQUATION OF STATE FOR COPPER IN THE FORM OF THE ROSA-MFI MODEL**
Ilya N. Arapov, A. A. Kayakin, A. S. Danilov, D. G. Gordeev, L. F. Gudarenko
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”, Sarov, Russia
- 4-59 15¹⁰ **EQUATION OF STATE FOR RUTHENIUM AT HIGH PRESSURES AND TEMPERATURES**
Konstantin V. Khishchenko
Joint Institute for High Temperatures RAS, Moscow, Russia
Federal Research Center of Problems of Chemical Physics and Medicinal Chemistry RAS, Chernogolovka, Russia
Moscow Institute of Physics and Technology, Dolgoprudny, Russia
South Ural State University, Chelyabinsk, Russia
- 4-32 15³⁰ **COLD COMPRESSION CURVES FROM AB INITIO CALCULATIONS AND AVERAGE-ATOM MODELS**
Anton A. Ovechkin, N. A. Smirnov, P. A. Loboda
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 15⁵⁰ *Coffee-break*
- 4-28 16²⁰ **MELTING CURVES OF HF AND ZR FROM FIRST-PRINCIPLES SIMULATION AND PULSE HEATING EXPERIMENT**
Dmitry V. Minakov, M. A. Paramonov, A. V. Dorovatovskiy, V. B. Fokin, P. R. Levashov, M. A. Sheindlin
Joint Institute for High Temperatures of the Russian Academy of Sciences, Moscow, Russia
- 4-9 16⁴⁰ **THERMOPHYSICAL PROPERTIES OF IRON FROM AB INITIO CALCULATIONS AND PULSE HEATING EXPERIMENT**
Ilya S. Galtsov^{1,2}, M. A. Paramonov^{1,2}, V. B. Fokin^{1,2}, D. V. Minakov^{1,2}, A. V. Dorovatovskiy^{1,2}, M. A. Sheindlin^{1,2}
¹Joint Institute for High Temperatures of the Russian Academy of Sciences
²Moscow Institute of Physics and Technology

SECTION 4

- 4-43 17⁰⁰ **PHYSICAL PROPERTIES OF REFRACTORY CARBIDES (ENTHALPY, SPECIFIC HEAT CP, MELTING HEAT, AND RESISTIVITY) – UP TO 5000 K; AND OF CARBON, – UP TO 8000 K (INCLUDING SPECIFIC HEAT CV)**
Alexander I. Savvatimckiy^{1, 2}, S. V. Onufriev²
¹P. N. Lebedev Physical Institute of RAS, Moscow, Russia
²Joint Institute for High Temperature of RAS, Moscow, Russia
- 4-57 17²⁰ **AB INITIO CALCULATIONS OF CONDUCTIVITY AND OPTICAL PROPERTIES OF Zr AND Pb IN THE VICINITY OF THE CRITICAL POINT**
Vladimir B. Fokin^{1, 2}, D. V. Minakov^{1, 2}, M. A. Paramonov^{1, 2}, P. R. Levashov^{1, 2}
¹Joint Institute for High Temperatures of the Russian Academy of Sciences, Moscow, Russia
²Moscow Institute of Physics and Technology (National Research University), Moscow, Russia
- 4-33 17⁴⁰ **DEVELOPMENT OF PARAMETRIC INTERATOMIC POTENTIALS BASED ON NEURAL NETWORKS FOR AL STRUCTURES**
Boris A. Panchenko, A. E. Mayer
Chelyabinsk State University, Chelyabinsk, Russia

Section 4 **PROPERTIES OF MATTER AT HIGH-INTENSITY PROCESSES**

MAY 30, TUESDAY

Morning session

Hall 1

Co-chairs: Oleg B. Naimark,
Alexander V. Petrovtsev

Presentations

- 4-1 9⁰⁰ **ELECTRONIC STRUCTURES AND PHYSICAL PROPERTIES
OF URANIUM HYDRIDE UNDER SHOCK COMPRESSION**
 Juan Cui, Z. Fu, H. Zheng, M. Zheng, D. Li, and Y. Yang
LCP, Institute of Applied Physics and Computational Mathematics, Beijing, China
- 4-19 9³⁰ **EQUATIONS OF STATE OF MINERALS AND EARTH MATERIALS**
Alexey A. Kayakin, V. G. Kudelkin, I. N. Arapov, D. G. Gordeev,
L. F. Gudarenko, V. A. Karepov
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”,
Sarov, Russia
- 4-63 9⁵⁰ **CONSTRUCTION OF THE EQUATION OF STATE OF MATERIALS
FROM THE RESULTS OF EXPERIMENTS USING SYNCHROTRON DIAGNOSIS**
Elena S. Shestakovskaya¹, M. A. Biryukova^{1,2}, N. L. Klinacheva¹, E. B. Smirnov^{1,2},
Ya. E. Starikov¹, A. P. Yalovets¹
¹South Ural State University (national research university), Chelyabinsk, Russia
²FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical
Physics”, Snezhinsk, Russia
- 4-27 10¹⁰ **NUMERICAL SIMULATION OF THERMODYNAMIC PARAMETERS
OF GERMANIUM UNDER HIGH-ENERGY LOADING**
Konstantin K. Maevskii
Lavrentyev Institute of Hydrodynamics SB RAS, Novosibirsk, Russia
Novosibirsk State University, Novosibirsk, Russia
- 4-5 10³⁰ **EQUATION OF STATE OF THE LIQUID PHASE OF TANTALUM
AT HIGH PRESSURES AND TEMPERATURES**
Ksenya A. Boyarskikh^{1, 2, 3}, K. V. Khishchenko^{1,2,3,4}
¹Joint Institute for High Temperatures RAS, Moscow, Russia
²Moscow Institute of Physics and Technology, Dolgoprudny, Russia
³Federal Research Center of Problems of Chemical Physics and Medicinal Chemistry RAS,
Chernogolovka, Russia
⁴South Ural State University, Chelyabinsk, Russia
- 10⁵⁰ *Coffee-break*
- 4-36 11²⁰ **PARTICLE VELOCITY DOUBLING AFTER SHOCK ARRIVAL
TO THE FREE SURFACE**
Alexander V. Petrovtsev
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical
Physics”, Snezhinsk, Russia

SECTION 4

- 4-29 11⁴⁰ **STUDY OF SELF-SIMILAR BEHAVIOR OF CONDENSED MATTER WITH DEFECTS UNDER INTENSE LOADING**
Oleg B. Naimark
Institute of Continuous Media Mechanics UB RAS, Perm, Russia
- 4-11 12⁰⁰ **MODEL OF PHASE TRANSITIONS IN AL-CU ALLOYS**
Natalya A. Grachyova, E. V. Fomin, A. E. Meyer
Chelyabinsk State University, Chelyabinsk, Russia
- 4-49 12²⁰ **PLASTIC STRAIN LOCALIZATION CAUSED BY EVOLUTION OF THE DEFECT STRUCTURE OF MATERIALS**
 Mikhail A. Sokovikov¹, M. A. Simonov², V. V. Chudinov¹, V. A. Oborin¹, S. V. Uvarov¹, O. B. Naimark¹
¹Institute of Continuous Media Mechanics of the Ural Branch of the Russian Academy of Sciences, Perm, Russia
²Perm National Research Polytechnic University, Perm, Russia
- 13⁰⁰ *Lunch*

Section 4 **PROPERTIES OF MATTER AT HIGH-INTENSITY PROCESSES**

MAY 31, WEDNESDAY

Afternoon session

Hall 3

Co-chairs: Alexander V. Pavlenko,
Alexander Yu. Dolgoborodov

Presentations

- 4-42 14³⁰ **MODIFIED TAYLOR TEST WITH PROFILED COPPER CYLINDERS:
EXPERIMENT, MICROSTRUCTURAL ANALYSIS
AND 3D SPH MODELING WITH OPTIMIZATION
OF THE DISLOCATION PLASTICITY MODEL**
Egor S. Rodionov, V. V. Pogorelko, V. G. Lupanov, P. N. Mayer, A. E. Mayer
Chelyabinsk state university, Chelyabinsk, Russia
- 4-7 14⁵⁰ **DYNAMIC FRACTURE OF TITANIUM: MOLECULAR DYNAMICS STUDY AND
MICROMECHANICAL MODEL**
Dmitry S. Voronin¹, A. E. Mayer²
Chelyabinsk State University, Chelyabinsk, Russia
- 4-23 15¹⁰ **ACCURACY OF SPALL STRENGTH DETERMINATION
FROM MEASUREMENTS ON THE CONTACT SURFACE**
Alexander V. Krasilnikov, V. N. Nogin, A. A. Degtayroyv, D. T. Yusupov
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical
Physics”, Snezhinsk, Russia
- 4-55 15³⁰ **DYNAMICS OF WAVE PROCESSES
OF COMPRESSION AND EXPANSION IN PALLADIUM
UNDER PICOSECOND LASER IRRADIATION**
Igor A. Stuchebryukhov^{1,2}, S. A. Abrosimov¹, A. Yu. Semenov^{1,3}, K. V. Khishchenko^{4,3,5,6}
¹Prokhorov General Physics Institute RAS, Moscow, Russia
²Lebedev Physical Institute RAS, Moscow, Russia
³Moscow Institute of Physics and Technology, Dolgoprudny, Russia
⁴Joint Institute for High Temperatures RAS, Moscow, Russia
⁵Federal Research Center of Problems of Chemical Physics and Medicinal Chemistry RAS,
Chernogolovka, Russia
⁶South Ural State University, Chelyabinsk, Russia
- 15⁵⁰ *Coffee-break*
- 4-10 16²⁰ **GENERATION OF DEFECTS IN SHOCK COMPRESSION OF METAL**
Sergey D. Gilev
Lavrentyev Institute of Hydrodynamics, Siberian Division of RAS, Novosibirsk, Russia
- 4-12 16⁴⁰ **FEATURES OF SHOCK COMPRESSION OF NANOSIZED NICKEL**
Alexander Yu. Dolgoborodov^{1,2}, T. A. Rostilov¹, S. Yu. Ananov¹, V. S. Ziborov¹,
V. V. Yakushev³, M. L. Kuskov²
¹Joint Institute for High Temperatures RAS, Moscow, Russia
²N. Semenov Federal Research Center for Chemical Physics RAS, Moscow, Russia
³Federal Research Center of Problems of Chemical Physics and Medicinal Chemistry RAS,
Chernogolovka, Russia

- 4-65 17⁰⁰ **EXPERIMENTAL RESULTS OF EVALUATING RESIDUAL ENERGY OF EXPLOSIVE-COMPACTED METAL SPHERES**
Dmitry T. Yusupov, A. Yu. Garmashev, D. P. Kuchko, A. A. Degtyaryov,
A. V. Petrovtsev, D. V. Shalkovskiy
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 4-37 17²⁰ **STRUCTURAL TRANSFORMATIONS AND MECHANICAL PROPERTIES OF TUNGSTEN UNDER INTENSE DEFORMATIONS UNDER HIGH PRESSURE AND DIFFERENT TEMPERATURES**
Vitaly P. Pilyugin^{1,3}, D. V. Zaytsev², A. A. Kuklina², G. P. Panfilov³, P. E. Panfilov²,
A. M. Patselov¹, K. A. Postovalova¹, D. I. Melkozerov^{1,3}, Yu. V. Solov’eva⁴,
D. A. Sosyan^{1,3}, T. P. Tolmachev¹
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²Ural State Mining University, Ekaterinburg, Russia
³Institute of Natural Sciences and Mathematics of Ural Federal University, Ekaterinburg, Russia
⁴Tomsk State University of Architecture and Civil Engineering, Tomsk, Russia

Section 4 **PROPERTIES OF MATTER AT HIGH-INTENSITY PROCESSES**

JUNE 1, THURSDAY

Afternoon session

Hall 1

Co-chairs: Denis G. Pankratov,
Irina G. Brodova*Presentations*

- 4-45 14³⁰ **UPGRADED GAMMA-RAY GENERATOR BASED ON IRONLESS PULSED BETATRON**
Kirill V. Savchenko, O. A. Shamro, Yu. P. Kuropatkin, V. I. Nizhegorodtsev, V. D. Selemir, V. A. Fomichev, A. A. Chinin
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”, Sarov, Russia
- 4-18 14⁵⁰ **METHODS FOR INCREASING THE MAXIMUM REGISTRATION BASE BY THE LASER RANGEFINDER METHOD**
Denis A. Kalashnikov, S. A. Finyushin, A. V. Fedorov, E. A. Chudakov, I. V. Shmelev, E. A. Razumkov, A. M. Tarasov, T. O. Sklyadneva
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”, Sarov, Russia
- 4-56 15¹⁰ **OPTICAL SCHEME OF THE HETERODYNE INTERFEROMETER METHOD WITH MULTIPLE TIME COMPACTION OF SIGNALS**
 Anton M. Tarasov, E. A. Chudakov, D. A. Kalashnikov, A. V. Fedorov, A. O. Yagovkin, E. A. Razumkov, A. E. Safronov, L. V. Chernov, T. O. Sklyadneva
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”, Sarov, Russia
- 4-21 15³⁰ **METHODS FOR INCREASING THE STREAK CAMERA DYNAMIC RANGE**
Pavel I. Konovalov, A. Yu. Sokolov, R. I. Nurtdinov, A. S. Dolotov, D. V. Nikishin, D. I. Smetankin, M. P. Vikulin, A. V. Shcherbakov, V. V. Mukhanov, I. A. Efimov
Dukhov Automatics Research Institute (VNIIA), Federal State Unitary Enterprise, Moscow, Russia
- 15⁵⁰ *Coffee-break*
- 16²⁰ **ANALYSIS OF SPACE-TIME FREE-SURFACE VELOCITY PROFILES FOR THE SAMPLES OF 12CR18NI10TI STEEL AND M1 COPPER**
Anton E. Kovalev^{1,2}, A. Yu. Garmashev¹, E. B. Smirnov^{1,2}, Yu. M. Kovalev², D. G. Pankratov¹, A. G. Poptsov¹, A. V. Olkhovsky¹
¹FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
²South Ural State University, Chelyabinsk, Russia

- 4-6 16⁴⁰ **THE STRUCTURAL STUDIES AND THE RHEOLOGY OF THE CONVERGENCE OF ALUMINUM SHELLS**
Irina G. Brodova¹, V. V. Astaf'ev¹, I. G. Shirinkina¹, S. V. Balushkin², G. V. Kuliakov², A. U. Simonov², V. I. Beliakov²
¹Mikheev Institute of Metal Physics, Ural Branch of the Russian Academy of Sciences, Ekaterinburg, Russia
²FSUE "Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics", Snezhinsk, Russia
- 4-2 17⁰⁰ **THE EFFECT OF HIGH STRAIN-RATE DEFORMATION AND HEAT TREATMENT ON THE STRUCTURE AND PROPERTIES OF LOW-ALLOY COPPER ALLOYS**
Darya N. Abdullina¹, I. V. Khomskaya¹, V. I. Zel'dovich¹, E. V. Shorokhov², A. E. Kheifets¹
¹M. N. Mikheev Institute of Metal Physics of the Ural Branch of RAS, Ekaterinburg, Russia
²FSUE "Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics", Snezhinsk, Russia
- 4-61 17²⁰ **THE DYNAMIC PROPERTIES OF COPPER AND COPPER ALLOYS UNDER SHOCK-WAVE LOADING**
Irina V. Khomskaya¹, D. N. Abdullina¹, S. V. Razorenov², E. V. Shorokhov³
¹M. N. Mikheev Institute of Metal Physics of the Ural Branch of RAS, Ekaterinburg, Russia
²Federal Research Center of Problems of Chemical Physics and Medicinal Chemistry RAS, Chernogolovka, Russia
³FSUE "Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics", Snezhinsk, Russia
- 4-14 17⁴⁰ **DEFORMATION MICROSTRUCTURES IN ZIRCON (ZrSiO₄) CRYSTALS RESULTING FROM SHOCK PRESSURES OF 20, 40, AND 60 GPa**
Dmitry A. Zamyatin^{1,2}, E. I. Kovaleva³
¹Zavaritsky Institute of Geology and Geochemistry Ural Branch, Russian Academy of Sciences, Ekaterinburg, Russia
²Ural Federal University, Ekaterinburg, Russia
³University of the Western Cape, Bellville, South Africa

Section 4 **PROPERTIES OF MATTER AT HIGH-INTENSITY PROCESSES**

JUNE 2, FRIDAY

Morning session

Hall 1

Co-chairs: Irina V. Khomskaya,
Evgeny V. Shorokhov

Presentations

- 4-17 9⁰⁰ **INVESTIGATION OF THE DEFECTIVE STRUCTURE IN SAMPLES OF A NICKEL HEAT-RESISTANT ALLOY MANUFACTURED WITH A LASER 3D PRINTER**
Natalya V. Kazantseva¹, D. I. Davydov¹, A. A. Pilshchikov², N. I. Vinogradova¹, E. V. Ezhov¹
¹Institute of Metal Physics, Ural Branch of the Russian Academy of Sciences, Ekaterinburg, Russia
²Snezhinsky Institute of Physics and Technology – branch of the Federal State Autonomous Educational Institution of Higher Professional Education “National Research Nuclear University “MEPHI”, Snezhinsk, Russia
- 4-20 9²⁰ **STRUCTURE AND DYNAMIC PROPERTIES OF SELECTIVE LASER MELTING ALUMINUM AK6 ALLOY**
Alexander I. Klenov¹, A. N. Petrova², I. G. Brodova², E. B. Smirnov¹, A. Yu. Garmashev¹, D. P. Kuchko¹
¹FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
²Mikheev Institute of Metal Physics, Ural Branch of Russian Academy of Sciences, Ekaterinburg, Russia
- 4-24 9⁴⁰ **MODIFICATION OF TECHNICAL ALUMINUM GRADES**
Viktor A. Kuznetsov, B. P. Tolochko, A. A. Zhdanok, Z. A. Korotaeva, M. A. Mikhailenko, L. K. Berdnikova
Institute of Solid State Chemistry and Mechanochemistry SB RAS, Novosibirsk, Russia
- 4-35 10⁰⁰ **INFLUENCE OF GRAPHEN ON DYNAMIC PROPERTIES OF ALUMINUM MATRIX COMPOSITES**
Anastasiya N. Petrova¹, I. G. Brodova¹, S. V. Razorenov², I. G. Shirinkina¹, E. V. Shorokhov³, K. V. Gaan³
¹Mikheev Institute of Metal Physics, Ural Branch of the Russian Academy of Sciences, Ekaterinburg, Russia
²Federal Research Center of Problems of Chemical Physics and Medicinal Chemistry, Chernogolovka, Russian
³FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 4-39 10²⁰ **EVOLUTION OF THE STRUCTURE OF CHROMIUM-HAFNIUM BRONZE UNDER HIGH-SPEED DYNAMIC DEFORMATION AND HIGH-PRESSURE TORSION**
Vladimir V. Popov¹, E. N. Popova¹, R. M. Falahutdinov¹, K. V. Gaan², E. V. Shorokhov²
¹M. N. Miheev Institute of Metal Physics, UB RAS, Ekaterinburg, Russia
²FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia

10⁴⁰ *Coffee-break*

- 4-41 11²⁰ **DYNAMIC PROPERTIES OF THE ALTEK ALUMINUM ALLOY**
Dmitry Y. Rassiyyenko¹, A. N. Petrova¹, G. V. Garkushin², A. S. Saviny², S. V. Razenov²
¹M. N. Mikheev Institute of Metal Physics of Ural Branch of Russian Academy of Sciences,
Ekaterinburg, Russia
²Federal Research Center of Problems of Chemical Physics and Medicinal Chemistry RAS,
Chernogolovka, Russia
- 4-46 11⁴⁰ **TO THE QUESTION OF FORMATION OF FILAMENTOUS STRUCTURES
IN SYNTACTIC FOAM UNDER THE ACTION OF A RELATIVISTIC ELECTRON
BEAM**
Dmitry N. Sadovnichii¹, Yu. M. Milekhin¹, K. Yu. Sheremet'ev¹, E. D. Kazakov^{2, 3},
M. Yu. Orlov², M. B. Markov³, E. B. Savenkov³
¹FSUE «The Federal center for dual-use technologies «Soyuz», Dzerzhinskii, Russia
²National Research Center «Kurchatov Institute», Moscow, Russia
³Keldysh Institute of Applied Mathematics, Russian Academy of Science, Moscow, Russia
- 4-15 12⁰⁰ **METHOD OF COMPOSITE MATERIAL'S THERMOGRAVIOMETRIC ANALYSIS**
Arsenii E. Zaponov
The Military Academy of Strategic Rocket Troops after Peter the Great, Balashiha, Russia
- 13⁰⁰ *Lunch*

Section 4P PROPERTIES OF MATTER AT HIGH-INTENSITY PROCESSES

MAY 29, MONDAY 14³⁰ TO 18⁰⁰
 MAY 30, TUESDAY 8⁴⁰ TO 13⁰⁰

Foyer

Posters

- 4-4 **INVESTIGATION OF THE INFLUENCE OF IRRADIATION WITH HIGH-ENERGY ELECTRONS ON THE PROPERTIES OF BINARY TOPOLOGICAL INSULATORS WITH DIFFERENT TYPES OF CONDUCTIVITY**
 Danil V. Belyaev¹, M. N. Sarychev², V. Y. Ivanov², K. A. Kokh³, O. E. Tereshchenko⁴, T. V. Kuznetsova^{1,2}
¹M. N. Miheev Institute of Metal Physics of UB RAS, Ekaterinburg, Russia
²Ural Federal University, Ekaterinburg, Russia
³V. S. Sobolev Institute of Geology and Mineralogy of SB RAS, Novosibirsk, Russia
⁴Rzhanov Institute of Semiconductor Physics of SB RAS, Novosibirsk, Russia
- 4-8 **SPALLATION RECORDING IN COPPER LINER DRIVEN BY HMX-BASED EXPLOSIVE**
 Igor G. Galiullin, A. Yu. Garmashev, E. B. Smirnov, A. V. Sarafannikov, D. P. Kuchko, K. M. Prosvirnin, D. G. Pankratov, K. V. Eganov, A. V. Vorobiev, A. S. Gremitskikh
 FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 4-13 **VACUUM TIGHT AND LOW-CONDUCTIVE CERAMICS BASED ON BARIUM ALUMINATES**
 Alexander A. Zhdanok, B. P. Tolochko, L. K. Berdnikova, Z. A. Korotaeva, M. A. Mikhailenko
 Institute of Solid State Chemistry and Mechanochemistry SB RAS, Novosibirsk, Russia
- 4-16 **STRUCTURE AND PROPERTIES OF AUSTENITIC STAINLESS STEEL PREPARED BY SELECTIVE LASER MELTING**
 Alexander I. Klenov², V. I. Zel’dovich¹, I. V. Khomskaya¹, N. Yu. Frolova¹, A. E. Kheifets¹, D. N. Abdullina¹, E. A. Petukhov², E. B. Smirnov², E. V. Shorokhov², A. A. Pil’shchikov²
¹Mikheev Institute of Metal Physics, Ural Branch, Russian Academy of Sciences, Ekaterinburg, Russia
²FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 4-22 **THE REACTIVITY OF ASD-6 POWDER MODIFIED BY V₂O₅ HYDROGEL**
 Alla V. Konyukova, V. G. Shevchenko, V. N. Krasilnikov, D. A. Eselevich
 Institute of Solid State Chemistry UB RAS, Ekaterinburg, Russia
- 4-26 **EFFECT OF 10-MeV ELECTRON IRRADIATION ON THE OPTICAL PROPERTIES OF BULK α -In₂Se₃ CRYSTALS**

 Alexey D. Lobanov¹, M. A. Sulimov¹, M. N. Sarychev², D. I. Radzivonchik¹, V. Yu. Ivanov², T. V. Kuznetsova^{1,2}
¹M. N. Mikheev Institute of Metal Physics UB RAS, Ekaterinburg, Russia
²Ural Federal University, Ekaterinburg, Russia

- 4-30 **CALCULATION OF REFRACTIVE INDICES FOR LiF AND Gd₃Ga₅O₁₂ SINGLE CRYSTALS UNDER PRESSURES UP TO 200 GPa**
Elisei I. Nesmiyanov¹, A. V. Krasilnikov², Y. E. Starikov¹, E. S. Shestakovskaya¹, A. Y. Leyve¹
¹South-Ural State University (National Research University), Chelyabinsk, Russia
²FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 4-34 **DIAGNOSTICS SYSTEMS FOR HIGH-CURRENT ELECTRON BEAM**
Ilya V. Penzin¹, A. R. Akhmetov¹, I. A. Zhuravlev¹, P. A. Kolesnikov¹, O. I. Meshkov², A. V. Petrenko², R. V. Protas¹, S. D. Khrenkov¹, D. N. Shepelev¹
¹FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
²Budker Institute of Nuclear Physics, SB RAS, Novosibirsk, Russia
- 4-38 **HEAT CARRIER FOR MICROCHANNEL DEVICES WITH LOCAL PULSED HEAT GENERATION**
Ilya I. Povolotskiy, D. V. Volosnikov, A. A. Igolnikov, P. V. Skripov
ITP UB RAS, Ekaterinburg, Russia
- 4-40 **STUDY OF THE EFFECT OF TREATMENT WITH ACCELERATED ELECTRONS ON THE CHANGES IN PHYSICAL PROPERTIES OF POLYETHYLENE TEREPHTHALATE USED FOR MEDICAL PRODUCTS**
Evgeniya A. Putilova, I. S. Kamantsev, V. P. Shveikin, I. G. Margamov
Institute of Engineering Science, Ural Branch of the Russian Academy of Sciences, Ekaterinburg, Russia
- 4-44 **CHANGING THE DYNAMIC PROPERTIES OF ALUMINUM BRONZE AFTER EQUAL-CHANNEL ANGULAR PRESSING**
Georgiy G. Savenkov¹, M. S. Smakovsky¹, V. V. Stolyarov²
¹Machine Building Plant «Armalit», Saint Petersburg, Russia
²Mechanical Engineering Research Institute of the RAS, Moscow, Russia
- 4-47 **MODELING OF SHOCK COMPRESSION OF TUNGSTEN–COPPER ALLOYS AT HIGH PRESSURES AND TEMPERATURES**
Nikolay N. Seredkin^{1, 2, 3}, K. V. Khishchenko^{1, 3, 4, 5}
¹Joint Institute for High Temperatures RAS, Moscow, Russia
²National Research Nuclear University MEPhI, Moscow, Russia
³Federal Research Center of Problems of Chemical Physics and Medicinal Chemistry RAS, Chernogolovka, Russia
⁴Moscow Institute of Physics and Technology, Dolgoprudny, Russia
⁵South Ural State University, Chelyabinsk, Russia
- 4-50 **STREAK TUBE WITH GaAs-BASED A^{III}B^V PHOTOCATHODE**
Artyom Yu. Sokolov, P. I. Konovalov, A. V. Sakharovsky, R. I. Nurtdinov, D. V. Nikishin, M. P. Vikulin, I. G. Pryanishnikov, A. S. Dolotov, A. B. Popugaev, A. V. Shevchik
Dukhov Automatics Research Institute (VNIIA), Federal State Unitary Enterprise, Moscow, Russia
- 4-51 **NUMERICAL SIMULATION OF THE FORMATION OF STRESS FIELDS IN HETEROGENEOUS EXPLOSIVES**
Yaroslav E. Starikov, A. P. Yalovets
South Ural State University (national research university), Chelyabinsk, Russia

- 4-53 **INFLUENCE OF CHEMICAL AND PHASE COMPOSITION ON ELECTROPLASTIC EFFECT IN Ti-BASED ALLOYS**
Vladimir V. Stolyarov¹, M. S. Smakovsky²
¹Mechanical Engineering Research Institute of the RAS, Moscow, Russia
²Machine Building Plant «Armalit» Saint Petersburg, Russia
- 4-54 **ELECTROPLASTIC EFFECT IN TINLESS BRONZE**
Vladimir V. Stolyarov¹, G. G. Savenkov², M. S. Smakovsky²
¹Mechanical Engineering Research Institute of the RAS, Moscow, Russia
²Machine Building Plant «Armalit» Saint Petersburg, Russia
- 4-58 **SHOCK COMPRESSIBILITY OF POLYCARBONATE FOAM AND THE EQUATION OF STATE OF THIS MATERIAL AT HIGH ENERGY DENSITIES**
Konstantin V. Khishchenko^{2, 3, 4, 5}, F. I. Tarasov¹, A. Yu. Nikolaev¹, R. N. Kanunnikov¹, A. S. Lobachyov¹, V. E. Simonov¹, Ya. M. Goropashnyi¹, E. B. Smirnov^{1, 2}, D. V. Petrov¹
¹FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
²South Ural State University, Chelyabinsk, Russia
³Joint Institute for High Temperatures RAS, Moscow, Russia
⁴Moscow Institute of Physics and Technology, Dolgoprudny, Russia
⁵Federal Research Center of Problems of Chemical Physics and Medicinal Chemistry RAS, Chernogolovka, Russia
- 4-60 **EXPERIMENTAL AND THEORETICAL STUDY OF THE THERMODYNAMIC PROPERTIES OF BERYLLIUM OXIDE AT HIGH PRESSURES IN SHOCK COMPRESSION WAVES**
Konstantin V. Khishchenko^{1, 2, 3, 4}, K. K. Krupnikov⁵, Yu. N. Zhugin⁵, A. Yu. Nikolaev⁵, E. B. Smirnov^{5, 4}, D. V. Petrov⁵
¹Joint Institute for High Temperatures RAS, Moscow, Russia
²Moscow Institute of Physics and Technology, Dolgoprudny, Russia
³Federal Research Center of Problems of Chemical Physics and Medicinal Chemistry RAS, Chernogolovka, Russia
⁴South Ural State University, Chelyabinsk, Russia
⁵FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 4-64 **FEATURES OF DEFORMATION OF METAL-PIPE COLLAPSE UNDER THE SHOCK WAVE GENERATED BY THE UNDERWATER EXPLOSION**
Dmitry T. Yusupov
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia

Section 5 **NUCLEAR AND HYDROGEN ENERGY**

MAY 31, WEDNESDAY

Afternoon session

Hall 1

Co-chairs: Vadim A. Simonenko,
Inga R. Makeeva

Presentations

- 5-23 14³⁰ **ANALYSIS OF RUSSIAN REGULATORY REQUIREMENTS
FOR SAFETY AT NPPS TO INDUSTRIAL PRODUCTION
OF HYDROGEN FROM WATER BY ELECTROCHEMICAL METHOD**
 Natalya L. Kharitonova¹, I. A. Kirillov¹, V. F. Simonenko², V. M. Kruykov²
¹National Research Center “Kurchatov Institute”, Moscow, Russia
²FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical
Physics”, Snezhinsk, Russia
- 14⁵⁵ **EXPERIMENTAL BASIS FOR INVESTIGATION IN THE INTEREST
OF EXPLOSIVE-SAFE HYDROGEN POWER**
Mikhail V. Nikiforov
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical
Physics”, Snezhinsk, Russia
- 15¹⁵ **EXPERIMENTAL RESEARCH OF LEAN HYDROGEN AIR FLAMES USING
THE MUT STAND**
Nikolay B. Anikin
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical
Physics”, Snezhinsk, Russia
- 5-9 15³⁵ **ON NON-EMIRICAL CLASSIFICATION OF THE SLOW FALEMS
IN HYDROGEN-CONTAINING GAS MIXTURES**
Igor A. Kirillov
National research centre “Kurchatov institute”, Moscow, Russia
- 16⁰⁰ *Coffee-break*
- 5-3 16³⁰ **MODELLING OF PASSIVE CATALYTIC RECOMBINER RVK-500 OPERATION
IN COMPLEX EXPERIMENTS USING THE CABARET-SC1 CODE**
Vyacheslav Yu. Glotov, A. A. Kanaev, V. G. Kondakov
Nuclear Safety Institute of the RAS, Moscow, Russia
- 5-16 16⁵⁰ **ANALISE OF HEAT RELEASE BY HYDROGEN COMBUSTIO
FOR A DIFFERENT KINETIC SCHEMAS**
Egor E. Pigasov^{1,2}, M. S. Zharlykhanova², Y. M. Kovalev²
¹FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical
Physics”, Snezhinsk, Russia
²South Ural State University (National Research University), Chelyabinsk, Russia
- 5-7 17¹⁰ **METHODICAL APPROACHES TO CREATING A MODEL
OF A NUCLEAR POWER PLANT WITH VVER FOR REALISTIC
NUMERICAL ANALYSIS OF SEVERE ACCIDENTS AND RADIATION SAFETY**
Kiril S. Dolganov
Nuclear Safety Institute of the Russian academy of sciences, Moscow, Russia

5-14 17²⁵ **MANUFACTURING AND RESEARCHING PROPERTIES OF GLASS SEALANTS
FOR THE SOFC AND SOC STACKS ASSEMBLY**



Viktoriya A. Nikonorova^{1,2}, M. V. Erpalov^{1,2}, A. V. Kuchugurov^{1,2},
S. G. Vlasova², N. T. Shardakov²

¹Institute of High Temperature Electrochemistry, Yekaterinburg, Russia

²Ural Federal University, Yekaterinburg, Russia

5-24 17⁴⁵ **CREATION THE FERRITIC GRADE STAINLESS STEEL
FOR THE PRODUCTION OF SOFC AND SOE SELL**

Peter A. Chugunov, M. V. Erpalov, V. A. Nikonorova, G. N. Starostin

Institute of High-Temperature Electrochemistry of the Ural Branch of the Russian Academy of
Sciences, Yekaterinburg, Russia

Section 5 **NUCLEAR AND HYDROGEN ENERGY**

JUNE 1, THURSDAY

Morning session

Hall 1

Co-chairs: Dmitry V. Khmel'nitskiy,
Vyacheslav P. Sokolov

Presentations

- 5-11 9⁰⁰ **SIMULATION OF THE SNF MANAGEMENT SYSTEM ON ATEC PLATFORM**
Inga R. Makeeva, N. D. Dyrda, D. V. Khmel'nitskiy, L. R. Fayrushina
FSUE "Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics", Snezhinsk, Russia
- 9²⁰ **ON TRANSMUTATION OF MINOR ACTINIDES IN MOLTEN SALT REACTORS**
Dmitry V. Khmel'nitskiy
FSUE "Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics", Snezhinsk, Russia
- 5-27 9⁴⁵ **CRITICAL AND NEUTRON ACTIVATION BENCHMARK EXPERIMENTS WITH MULTIPLYING SYSTEMS OF METAL PLUTONIUM WITHOUT A REFLECTOR INTENDED FOR VALIDATION OF NUCLEAR PHYSICS DATA AND COMPUTER CODES SIMULATING NEUTRON TRANSPORT**
Alexey A. Yudov, V. A. Adarchenko, S. A. Andreev, A. A. Vaivod, S. S. Besov, D. A. Prokopyev, I. I. Kostenko, D. I. Sergina, D. V. Khmel'nitskiy
FSUE "Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics", Snezhinsk, Russia
- 5-18 10⁰⁵ **DISTILLATION OF THE LiCl–KCl BASED ELECTROLYTE AT REDUCED PRESSURES**
Alexey M. Potapov^{1,2}, A. B. Salyulev¹, V. Yu. Shishkin¹, Yu. P. Zaikov¹
¹Institute of High-Temperature Electrochemistry UB RAS, Ekaterinburg, Russia
²Ural State Mining University, Ekaterinburg, Russia
- 5-13 10²⁵ **PURIFICATION OF FLiNaK MELT FROM OXYGEN-CONTAINING IMPURITIES AND ONLINE MONITORING CONCENTRATION**
Peter N. Mushnikov, K. R. Karimov, K. E. Seleverstov, A. A. Maslenikova, Yu. P. Zaikov
Institute of High Temperature Electrochemistry UB RAS, Yekaterinburg, Russian Federation
- 10³⁰ *Coffee-break*
- 5-1 11¹⁵ **A NEW NEUTRON SOURCE IS THE PULSATING NEPTUNE RESEARCH REACTOR AT JINR: CURRENT STATUS AND PLANS**
Maxim V. Bulavin
Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia
- 5-25 11³⁵ **FEATURES OF THE DYNAMICS OF THE PULSATING NEPTUNE REACTOR**
Evgeny P. Shabalin
Joint Institute for Nuclear Research, Dubna, Russia

- 5-2 11⁵⁵ **CALCULATIONS OF THE POWER DYNAMICS
OF NEPTUN PULSED REACTOR. THE PROBLEM OF INSTABILITY**
 Alexander E. Verhoglyadov
Joint Institute for Nuclear Research, Dubna, Russia
- 5-5 12³⁰ **NUCLEAR ENERGY AS A BASIS OF SUSTAINABLE DEVELOPMENT**
Nikolay V. Gorin¹, B. K. Vodolaga¹, V. P. Kuchinov², V. V. Shidlovskiy³
¹FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical
Physics”, Snezhinsk, Russia
²National Research Nuclear University MEPhI, Moscow, Russia
³JSC «Proryv», Moscow, Russia
- 12³⁵ **PRESENTATION OF POSTERS**
- 13⁰⁰ *Lunch*

Section 5P NUCLEAR AND HYDROGEN ENERGY

MAY 31, WEDNESDAY C 14³⁰ ДО 18⁰⁰
JUNE 1, THURSDAY C 8⁴⁰ ДО 13⁰⁰

Foyer

Posters

- 5-22 **NUMERICAL SIMULATION OF ACCIDENT HYDROGEN RELEASE FROM A HIGH-PRESSURE VESSEL INTO OPEN SPACE**
Yuri A. Tomilov, E. M. Shchennikova
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
Snezhinsk physcotechnical institute of National research nuclear university MEPhI, Snezhinsk, Russia
- 5-6 **FEATURES OF FORTHCOMING EXPORT OF FAST REACTORS WITH CLOSED NUCLEAR FUEL CYCLE AS A RESPONSE TO MODERN CHALLENGES**
Nikolay V. Gorin¹, N. P. Voloshin¹, Yu. I. Churikov¹, V. P. Kuchinov², V. V. Shidlovskiy³
¹FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
²National Research Nuclear University MEPhI, Moscow, Russia
³JSC «Proryv», Moscow, Russia
- 5-15 **RESULTS AND PERSPECTIVES OF NMR SPECTROSCOPY METHODS IN STUDYING URANIUM MONONITRIDE**
Vasily V. Ogloblichev¹, Y. V. Piskunov¹, A. M. Potapov²
¹M. N. Mikheev Institute of Metal Physics of Ural Branch of Russian Academy of Sciences, Yekaterinburg, Russia
²Institute of High-Temperature Electrochemistry of Ural Branch of Russian Academy of Sciences, Yekaterinburg, Russia
- 5-17 **STEELS UNDER IRRADIATION: EVOLUTION OF THE DISLOCATION STRUCTURE**
Pavel A. Pokatashkin
Dukhov Research Institute of Automatics, Moscow, Russia
- 5-19 **EVALUATION OF THE ELECTRICAL CONDUCTIVITY OF MULTICOMPONENT MELTS CONTAINING CHLORIDES OF ONE-, TWO- AND TRIVALENT METALS**
Alexey M. Potapov^{1,2}, A. B. Salyulev¹
¹Institute of High-Temperature Electrochemistry UB RAS, Ekaterinburg, Russia
²Ural State Mining University, Ekaterinburg, Russia
- 5-20 **PROCESS OF CREATING A CRYOGENIC TARGET OF INDIRECT DRIVE FOR LASER THERMONUCLEAR FUSION**
Marina A. Rogozhina, E. Yu. Zarubina
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”, Sarov, Russia
- 5-8 **THE CONTROL METHODS OF HYDROGEN ISOTOPES SOLID LAYER PARAMETERS IN INDIRECT-DRIVE CRYOGENIC TARGET**
Elena Yu. Zarubina, M. A. Rogozhina
FSUE “Russian Federal Nuclear Center – All-Russian Scientific Research Institute of Experimental Physics”, Sarov, Russia

- 5-10 **ANEUTRONIC PROTON–BORON FUSION IN OSCILLATING PLASMA OF MINIATURE VACUUM DISCHARGE**
Yuri K. KurIl'lenkov^{1,2}, A. V. Oginov¹, S. Yu. Guskov¹, I. S. Samoylov²
¹Lebedev Physical Institute RAS, Moscow, Russia
²Joint Institute of High Temperatures RAS, Moscow, Russia
- 5-26 **ELECTROCHEMICAL REDUCTION OF PELLETIZED UO₂–Pd POWDER MIXTURE IN THE LiCl–Li₂O MELT AT 650°C**
Alexey V. Shishkin, V. Yu. Shishkin, A. A. Maslenikova, Yu. P. Zaikov
Institute of High Temperature Electrochemistry of the Ural Branch of the Russian Academy of Sciences, Ekaterinburg, Russia
- 5-21 **CALCULATION OF THE PYRAMIDAL OBJECTS MAGNETIC FIELD IN COMSOL MULTIPHYSICS**
Vasily V. Saveliev, V. A. Sapunov, A. V. Sergeev
Ural Federal University named after the First President of Russia B. N. Yeltsin, Ekaterinburg, Russia
- 5-4 **MODELS AND CAPABILITIES OF XRD SYSTEMS FROM TONGDA**
Marat F. Akhmetov, D. G. Golovanov
Melytec Ltd., Moscow, Russia

**Section 6 NUMERICAL METHODS, ALGORITHMS, CODES
AND ACCURATE SOLUTIONS****MAY 30, THURSDAY****Afternoon session**

Hall 2

Co-chairs: Alexey A. Bragin,
Semyon V. Senchukov*Presentations*

- 6-65 14³⁰ **ANISOTROPIC MODEL OF CLOSING ELASOPLASTICITY EQUATIONS FOR MULTI-MATERIAL MEDIUM IN MIXED CELLS**
Yuri V. Yanilkin, A. L. Stadnik, O. O. Toporova
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”, Sarov, Russia
- 6-21 14⁵⁰ **ABOUT THE REGULARISED GAS DYNAMIC EQUATIONS AND ITS IMPLEMENTATIONS TO NUMERICAL CALCULATIONS**
Tatyana G. Elizarova
Keldysh institute of applied mathematics RAS, Moscow, Russia
- 6-30 15¹⁰ **CAPABILITIES OF THE QUASI-GAS DYNAMIC (QGD) ALGORITHM WHEN IMPLEMENTING IN OPENFOAM**
Mariya A. Kiryushina¹, T. G. Elizarova¹, and A. C. Epikhin²
¹Keldysh Institute of Applied Mathematics, Russian Academy of Sciences, Moscow, Russia
²Ivannikov Institute for System Programming, Russian Academy of Sciences, Moscow, Russia
- 6-34 15³⁰ **SIMULATION OF THE ANISOTROPY OF THE COLD AND THERMAL PARTS OF PRESSURE**
Marina N. Krivosheina^{1,2}, E. V. Tuch¹
¹Institute of Strength Physics and Materials Science of SB RAS, Tomsk, Russia
²Tomsk State University, Tomsk, Russia
- 6-50 15⁵⁰ **ENHANCING THE ACCURACY OF THE GODUNOV-TYPE SPH METHOD USING LINEAR RECONSTRUCTION OF THE VALUES AT INTERPARTICLE CONTACTS FOR MODELING VISCOUS AND ELASTIC-PLASTIC MEDIA**
George D. Rublev, S. A. Dyachkov, A. N. Parshikov
FSUE «N.L. Dukhov All-Russian Research Institute of Automatics», Moscow, Russia
- 16¹⁰ *Coffee-break*
- 6-11 16³⁰ **APPLICATION OF CONVERGENT TRIGONOMETRIC SERIES FOR SOLVING A SYSTEM OF NONLINEAR PARTIAL DIFFERENTIAL EQUATIONS**
Sergey P. Bautin, O. A. Karelina
Snezhinsky Institute of Physics and Technology of NRU MEPhI, Snezhinsk, Russia
- 6-35 16⁵⁰ **ANALYTICAL AND NUMERICAL MODELING OF THE FLOWS IN THE LOWER PARTS OF ASCENDING VORTEX FLOWS**
Irina Yu. Krutova, A. A. Bugaenko, A. O. Kazachinsky, O. V. Opryshko
Snezhinsky Institute of Physics and Technology National Research Nuclear University “MEPhI”, Snezhinsk, Russia

- 6-44 17¹⁰ **NUMERICAL SIMULATION OF DESTRUCTION TROPICAL CYCLONES WITH THE USE OF REASONABLE ENERGY COSTS**
Alexander G. Obukhov³, S. P. Bautin¹, V. E. Zamislov²
¹Snezhinsky Institute of Physics and Technology of the National Research Nuclear University MEPhI», Snezhinsk, Russia
²Ural State University of Railway Transport», Ekaterinburg, Russia
³Tyumen Industrial University», Tyumen, Russia
- 6-67 17³⁰ **THE “KREST” TYPE SCHEME MODIFICATION TO ELIMINATE THE “STAGGERED” ERROR**
Yuri V. Yanilkin, O. O. Toporova, A. M. Erofeev
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”, Sarov, Russia
- 6-27 17⁵⁰ **USE OF THE SPH METHOD MODIFICATION (PRICE METHOD) FOR 2D NUMERICAL SIMULATION OF GAS DYNAMIC PROCESSES WITH DETONATION**
 Irina V. Zalyalova, O. K. Linnik, D. M. Linnik, T. I. Zhilnikov, E. A. Kulikova
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”, Sarov, Russia

**Section 6 NUMERICAL METHODS, ALGORITHMS, CODES
AND ACCURATE SOLUTIONS****MAY 31, WEDNESDAY****Morning session**

Hall 2

Co-chairs: Mikhail M. Shatov,
Yan V. Pronin*Presentations*

- 6-38 9⁰⁰ **APPLICATION OF THE INHOMOGENEOUS TIME STEP
IN THE KUROPATENKO METHOD FOR MODELING GAS-DYNAMIC
PROCESSES IN EULERIAN COORDINATES**
Dmitry A. Mastjuk¹, P. E. Belyaev^{1,2}, I. R. Makeyeva^{1,2},
T. A. Kupriyanets¹, E. E. Pigasov^{1,2}
¹FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical
Physics”, Snezhinsk, Russia
²South Ural State University, Chelyabinsk, Russia
- 6-51 9²⁰ **SUB-CELL RECONSTRUCTION OF DISCONTINUOUS SOLUTIONS
WITH USING MACHINE LEARNING ALGORITHMS**
Alexey A. Serezhkin, S. A. Dyachkov, R. V. Muratov
FSUE “N. L. Dukhov All-Russian Research Institute of Automatics”, Moscow, Russia
- 6-49 9⁴⁰ **CONVECTIVE SHEAR FLOWS OF VISCOUS FLUIDS
WITH COUPLE STRESSES**
Evgeny Yu. Prosviryakov, N. V. Burmasheva
Sector of Nonlinear Vortex Hydrodynamics, Institute of Engineering Science UB RAS, Ekaterinburg,
Russia
Department of Information Technologies and Control Systems, Ural Federal University,
Ekaterinburg, Russia
- 6-41 10⁰⁰ **COMPARISON OF VARIOUS CRITERIA OF ADAPTIVE MESH REFINEMENT**
Rodion V. Muratov, A. A. Serezhkin
FSUE “N. L. Dukhov All-Russian Research Institute of Automatics”, Moscow, Russia
- 6-42 10²⁰ **NUMERICAL SOLUTION OF 2D PROBLEMS WITH PHASE TRANSITIONS
ON ADAPTIVE MESHES**
Artyom M. Mustafin, S. N. Lebedev, N. N. Veselova
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical
Physics”, Snezhinsk, Russia
- 10⁴⁰ *Coffee-break*
- 6-56 11⁰⁰ **INVESTIGATION THE ENERGY OF VARIOUS TYPE GRAIN BOUNDARIES
IN ALUMINUM BY MACHINE LEARNING METHODS**
Evgeny V. Fomin
Chelyabinsk State University, Chelyabinsk, Russia

- 6-13 11²⁰ **BICOMPACT SCHEMES AND THEIR APPLICATION TO NUMERICAL MODELING IN DYNAMICS OF IDEAL AND VISCOUS GASES**
Mikhail D. Bragin
Keldysh Institute of Applied Mathematics RAS, Moscow, Russia
Moscow Institute of Physics and Technology (National Research University), Dolgoprudny, Russia
- 6-16 11⁴⁰ **DERIVATION OF DIFFERENTIAL EQUATIONS FOR CALCULATION OF THE “IDEAL” CASCADE FOR MULTICOMPONENT MIXTURE SEPARATION**
Vadim M. Gadelshin^{1,2}, O. E. Aleksandrov¹
¹Ural Federal University B. N. Yeltsin, Yekaterinburg, Russia
²Institute of Industrial Ecology UB RAS, Yekaterinburg, Russia
- 6-40 12⁰⁰ **AN APPLICATION OF THE DYNAMIC MESH REFINEMENT TO MODEL RAYLEIGH–TAYLOR INSTABILITY**
Nikita A. Mikhaylov, I. V. Glazyrin, N. V. Glazyrina, M. A. Pisklova
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 6-19 12²⁰ **COUPLING OF NUMERICAL METHODS IN A UNIFIED COMPUTER PROGRAM**
Sergey A. Dyachkov, R. V. Muratov, S. Yu. Grigoryev
Dukhov Research Institute of Automatics (VNIIA), Moscow, Russia
- 13⁰⁰ *Lunch*

Afternoon session

Co-chairs: Nikolay G. Karlykhanov,
Alexander A. Shestakov

- 6-32 14³⁰ **KINETIC THEORY OF THE EXPANSION OF A MULTICOMPONENT PLASMA IN A PLANAR VACUUM DIODE**
 Vasily Yu. Kozhevnikov, N. S. Semeniuk, A. O. Kokovin, A. V. Kozyrev
Institute of High Current Electronics SB RAS, Tomsk, Russia
- 6-12 14⁵⁰ **NUMERICAL SIMULATION OF THE THERMAL AND STRESSED STATE OF A CONTAINER AND SURROUNDING ROCK MASSIF**
Ivan O. Borovskiy
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 6-15 15¹⁰ **PROFESSOR A. D. GADZHIEV’S RESEARCH WORK AT RFNC – VNIITF**
El’dar M. Vaziev, S. Y. Kuzmin, S. N. Lebedev, E. M. Romanova,
L. V. Sokolov, A. A. Shestakov
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 6-28 15³⁰ **MULTIDIMENSIONAL ANALOGUES OF THE GELFAND–LEVITAN–KREIN–MARCHENKO EQUATIONS**
Sergey I. Kabanikhin, M. A. Shishlenin, N. S. Novikov
Sobolev Institute of Mathematics SB RAS, Novosibirsk, Russia
Novosibirsk State University, Novosibirsk, Russia
Institute of Computational Mathematics and Mathematical Geophysics SB RAS, Novosibirsk, Russia

SECTION 6

- 6-43 15⁵⁰ **A SELF-SIMILAR RAREFACTION WAVE IN ELASTOPLASTIC MATERIAL (EXACT SOLUTION AND NUMERICAL CALCULATIONS)**
Vladimir N. Nogin, N. S. Zhilayeva
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 16¹⁰ *Coffee-break*
- 6-45 16³⁰ **IDENTIFICATION OF SMALL TERMS OF A TIME SERIES**
Gennady V. Orlov
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 6-64 16⁵⁰ **DYNAMICS OF NEUTRON MULTIPLICATION IN LAYERS OF A STATIONARY SYSTEM**
Vladimir M. Shmakov, S. A. Orlov, L. F. Gordeychuk
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 6-53 17¹⁰ **EFFECT OF THE MAXIMUM DENSITY OF WATER ON COOLING RATES OF WATER-SATURATED POROUS MEDIA**
Oleg A. Simonov^{1, 3}, L. N. Filimnova^{2, 3}
¹Tyumen Scientific Center of the Siberian Branch of the Russian Academy of Sciences, Tyumen, Russia
²Tyumen Branch of the Khristianovich Institute of Theoretical and Applied Mechanics of the Siberian Branch of the Russian Academy of Sciences, Tyumen, Russia
³Tyumen Industrial University, Tyumen, Russia

**Section 6 NUMERICAL METHODS, ALGORITHMS, CODES
AND ACCURATE SOLUTIONS**

JUNE 1, THURSDAY

Morning session

Hall 2

Co-chairs: Artyom V. Karpeev,
Philip A. Sapozhnikov

Presentations

6-2 9⁰⁰ **MODELLING STOCHASTIC RADIATIVE TRANSFER IN RANDOM MIXTURES**



C.-Z. Gao, Z.-F. Fan, J.-W. Yin, P. Wang, J.-G. Wang
Institute of Applied Physics and Computational Mathematics, Beijing, China

6-1 9⁴⁰ **A NEW MMALE METHOD BASED ON A NOVEL VOF METHOD**



Bojiao Sha¹, Zupeng Jia²
¹Graduate School of China Academy of Engineering Physics, Beijing, China
²Institute of Applied Physics and Computational Mathematics, Beijing, China

6-4 10²⁰ **THEORETICAL INVESTIGATION OF THE INTRINSIC OXYGEN DEFECTS
IN UO₂ (111) AND PuO₂ (111) SURFACES**



W. T. Lv¹, B. Sun¹, P. F. Guan², Y. Yang¹
¹LCP, Institute of Applied Physics and Computational Mathematics, Beijing, China
²Beijing Computational Science Research Center, Beijing, China

11⁰⁰ *Coffee-break*

6-8 11²⁰ **A GRP-BASED HIGH RESOLUTION AND EFFICIENT GHOST FLUID METHOD
FOR TWO-DIMENSIONAL COMPRESSIBLE MULTIMEDIUM FLOWS**



Zhixin Huo¹, Jiequan Li², Zupeng Jia³
¹Graduate School of China Academy of Engineering Physics, Beijing, China
²Academy of Multidisciplinary Studies, Capital Normal University, Beijing, China
³Institute of Applied Physics and Computational Mathematics, Beijing, China

6-9 12⁰⁰ **TWO NEW THREE-DIMENSIONAL CONTACT ALGORITHMS
FOR STAGGERED LAGRANGIAN HYDRODYNAMICS**



Zupeng Jia
Institute of Applied Physics and Computational Mathematics, Beijing, China

13⁰⁰ *Lunch*

Afternoon session

Co-chairs: Alexey P. Arsent'ev,
El'dar M. Vaziev

6-52 14³⁰ **ASYMPTOTIC SOLUTIONS OF THE BOLTZMANN EQUATION
AND TURBULENCE**



Sergey A. Serov
Institute of Theoretical and Mathematical Physics,
FSUE "Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics",
Sarov, Russia

- 6-18 14⁵⁰ **ALGORITHMS AND FEATURES OF SOFTWARE IMPLEMENTATION
IN THE URS-OF PACKAGE OF A SEMI-EMPIRICAL MODEL
OF WIDE-RANGE EQUATIONS OF STATE ROSA-MFI**
 Artyom S. Danilov, D. G. Gordeev, O. N. Shumilina, I. N. Arapov
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”,
Sarov, Russia
- 6-39 15¹⁰ **TWO-DIMENSIONAL PROBLEM OF OVERTURNING
A WAVE WHEN A TSUNAMI COMES ASHORE**
 Alexey V. Mezentsev, S. L. Deryabin
Ural State University of Railway Transport, Yekaterinburg, Russia
- 6-20 15³⁰ **SURFACE MESH GENERATION FOR CFD COMPUTATION MODELS
PREPARATION IN “LOGOS” SOFTWARE PACKAGE**
 Elena O. Evstifeeva, O. N. Borisenko, D. M. Pankratov,
T. V. Tsalko, A. I. Shavkhitdinova
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”,
Sarov, Russia
- 6-26 15⁵⁰ **A STOCHASTIC METHOD FOR NUMERICAL SIMULATION OF VAN ALLEN
RADIATION BELTS**
 Adel’ N. Zalyalov, A. E. Shirokov, N. V. Ivanov
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”,
Sarov, Russia
- 16¹⁰ *Coffee-break*
- 6-36 16³⁰ **METHODS TO ANALYZE THE QUALITY OF UNSTRUCTURED MESHES
OF RANDOM POLYHEDRONS TO SIMULATE AERO-
AND HYDRO-DYNAMIC PROBLEMS IN LOGOS SOFTWARE PACKAGE**
 Milana V. Kuzmenko, O. N. Borisenko, K. A. Blazhnova, T. E. Timaeva
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”,
Sarov, Russia
- 6-47 16⁵⁰ **THIN MESHER IN CFD “LOGOS” SOFTWARE PACKAGE**
 Natalya V. Popova, O. N. Borisenko, A. G. Giniyatullina, A. O. Evstifeeva,
M. V. Kuzmenko, V. V. Lazarev, D. M. Pankratov, T. V. Tsalko, E. Yu. Arapova
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”,
Sarov, Russia
- 6-24 17¹⁰ **ADAPTING THE EGIDA-TEST CODE TO COMPUTATIONS ON GPUs**
 Alexey M. Erofeev, E. A. Sizov
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”,
Sarov, Russia
- 6-54 17³⁰ **UP-TO-DATE TENDENCIES OF INTENSE UNIPOLAR AND BIPOLAR BEAMS
OF CHARGED PARTICLES THEORY**
 Valery A. Syrovoy, M. A. Zav’yalov
All-Russian Electro-Engineering Institute – Branch of FSUE «Russian Federal Nuclear Center –
Zababakhin All – Russia Research Institute of Technical Physics», Moscow, Russia

**Section 6 NUMERICAL METHODS, ALGORITHMS, CODES
AND ACCURATE SOLUTIONS**

JUNE 2, FRIDAY

Morning session

Hall 2

Co-chairs: Ilya S. Chubareshko,
Anton P. Ponomarev

Presentations

- 6-5 9⁰⁰ **TENSORKMC: KINETIC MONTE-CARLO SIMULATION
OF 50 TRILLIONS OF ATOMS DRIVEN BY DEEP LEARNING
ON A NEW GENERATION OF SUNWAY SUPERCOMPUTER**
 Xin Chen, H.-F. Song
Institute of Applied Physics and Computational Mathematics, Beijing, China
- 6-7 9⁴⁰ **THE POSITIVITY-PRESERVING FINITE VOLUME SCHEME
WITH FIXED STENCILS FOR RADIATION DIFFUSION PROBLEMS
ON GENERAL POLYHEDRAL MESHES**
 Zhi-Ming Gao
Institute of Applied Physics and Computational Mathematics, Beijing, China
- 6-6 10²⁰ **NEUTRONICS CONCEPTUAL RESEARCH ON A HYBRID BLANKET OF CHINA
FUSION ENGINEERING TEST REACTOR**
 X. M. Shi¹, X. Wang², G.-M. Qin¹, R. Li², L. Deng¹, X.-J. Peng¹
¹Institute of Applied Physics and Computational Mathematics, Beijing, China
²CAEP Software Center for High Performance Numerical Simulation, Beijing, China
- 6-29 11⁴⁰ **HYBRID INTELLIGENCE AND SELF-LEARNING SYSTEMS**
 Alexander A. Karandeev, V. P. Osipov
Institute of Applied Mathematics named after M. V. Keldysh of the RAS, Russia, Moscow
- 11⁰⁰ *Coffee-break*
- 13⁰⁰ *Lunch*

SECTION 6

Section 6P NUMERICAL METHODS, ALGORITHMS, CODES AND ACCURATE SOLUTIONS

MAY 31, WEDNESDAY 14³⁰ TO 18⁰⁰

JUNE 1, THURSDAY 8⁴⁰ TO 13⁰⁰

Foyer

Posters

- 6-66 **A COMPUTATIONAL METHOD FOR GAS DYNAMIC FLOWS WITH A RIGID BODY HAVING AN INTERFACE INSIDE MOTIONLESS CELLS**
Yury V. Yanilkin, O. M. Voytenko
FSUE “Russian Federal Nuclear Center – All-Russian Research Institute of Experimental Physics”, Sarov, Russia
- 6-10 **REGULARIZATION METHOD FOR PROCESSING SMALL-ANGLE X-RAY SCATTERING CURVES OBTAINED USING X-RAY POWDER DIFFRACTION SYSTEM**
Arsen R. Bakirov, A. V. Stankevich
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 6-14 **NUMERICAL SIMULATION OF RISING SKEWED STREAMS BY LINEARIZED HYDRODYNAMICS EQUATIONS WITH CORIOLIS FORCE**
Anna A. Bugaenko^{1,2}, I. Y. Krutova²
¹FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
²MEPI National Nuclear Research University’s Snezhinsk Physicotechnical Institute, Snezhinsk, Russia
- 6-22 **NUMERICAL STUDY TO SIMULATE THE EFFECT OF SHOCK WAVE LOADING BY CYLINDRICAL CHARGE INITIATED INSIDE THE WELL BORE TUBE**
Elena Yu. Emelyanova, V. V. Dotsenko, A. G. Neskin, M. V. Nikulshin, D. V. Petrov
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 6-23 **TO THE 100th ANNIVERSARY OF THE BIRTH OF K. K. KRUPNIKOV. SHOCK INTERACTION BETWEEN A RIGID IMPACTOR AND A TARGET AT SUPERSONIC SPEED**
Elena Yu. Emelyanova, V. V. Dotsenko, M. V. Nikulshin
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 6-25 **NUMERICAL SIMULATION OF GAS DYNAMIC PROBLEMS BY SEMI-ANALYTICAL METHOD IN EULERIAN COORDINATES**
Madina S. Zharylkanova, A. P. Yalovec, N. L. Klinacheva
South Ural State University, Chelyabinsk, Russia
- 6-31 **MATHEMATICAL MODELING OF THE INTERACTION OF VAROUS MEDIA DESCRIBED BY LAGRANGIAN AND EULERIAN VARIABLES**
Natalya L. Klinacheva, M. S. Zharilkanova, E. S. Shestakovskaya, A. P. Yalovec
South Ural State University, Chelyabinsk, Russia

- 6-33 **VISUALIZATION OF THE INITIAL AIR FLOWS DURING THE ORGANIZATION OF BLOWING UP**
Sergey N. Kononov^{1,2}, E. S. Levunina^{1,3}
¹MEPhI, Snezhinsk, Russia
²SUSU, Ozersk, Russia
³FSUE «PO «Mayak», Ozersk, Russia
- 6-46 **SOLUTION OF THE TRANSPORT EQUATION IN THE PROBLEM OF GAS OUTFLOW ON AN OBLIQUE WALL**
Evgeny I. Ponkin
Snezhinsk Engineering and Technological Institute of National Research Nuclear University MEPhI, Snezhinsk, Russia
FSUE “Mayak Production Association” State Enterprise “Rosatom”, Ozersk, Russia
- 6-48 **CONVECTIVE SHEAR FLOWS OF VISCOUS FLUIDS WITH COUPLE STRESSES**
Evgeny Yu. Prosviryakov, N. V. Burmasheva
Sector of Nonlinear Vortex Hydrodynamics, Institute of Engineering Science UB RAS, Ekaterinburg, Russia
Department of Information Technologies and Control Systems, Ural Federal University, Ekaterinburg, Russia
- 6-57 **RESULTS OF RESEARCH ON X-RAY TRANSPORT IN ICF PROBLEMS FOR INDIRECTLY DRIVEN TARGETS**
Ilya S. Chubareshko, V. A. Lykov, A. A. Shestakov
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 6-63 **KINETIC EFFECTS IN RADIATIVE HEAT TRANSFER APPROXIMATION FOR SOLVING RADIATION TRANSPORT**
Alexander A. Shestakov, D. A. Koshutin
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 6-59 **ANALYTICAL TESTS TO INVESTIGATE CORRECTING COEFFICIENTS IN THE QUASI-TRANSPORT METHOD**
Alexander A. Shestakov
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 6-60 **STABILITY OF THE TVDR DIFFERENCE SCHEMES**
Alexander A. Shestakov
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 6-58 **FLECK’S PROBLEMS TURNED 50**
Alexander A. Shestakov
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia
- 6-61 **APPLICATION OF CORRECTION METHODS FOR SOLVING RADIATIVE HEAT TRANSFER**
Alexander A. Shestakov
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia

6-62 **EXACT SOLUTIONS OF MULTIDIMENSIONAL
STATIONARY RADIATION AND ENERGY TRANSFER EQUATIONS**

Alexander A. Shestakov

FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”,
Snezhinsk, Russia

6-55 **INVESTIGATION INTO THE STRENGTH OF THE HERMETIC ADAPTER
CONSTRUCTION ELEMENTS**

Natalya N. Tulaeva^{1,2}, I. V. Minaev¹, A. V. Mkrtumyan^{1,3}, M. V. Nikulshin¹, O. S. Putilin¹,
V. V. Sergodeev¹, A. A. Tabatchikov¹

¹FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”,
Snezhinsk, Russia

²FSAEI of HE «South Ural State University», Chelyabinsk, Russia

³FSEI of HE «Snezhinsk State Institute of Physics and Technology», Snezhinsk, Russia

Section 7 APPLICATION OF PHYSICO-MATHEMATICAL TECHNOLOGIES TO SOLVING BASIC MEDICAL PROBLEMS

MAY 29, MONDAY

Afternoon session

Hall 3

Co-chairs: Sergey N. Lebedev,
Grigoriy D. Kaminskiy

Presentations

7-17 14³⁰ **SIMULATION OF COVID-19 EPIDEMIC IN MOSCOW WITH AN AGENT-BASED MODEL**

Andrey V. Sokolov, V. V. Vlasov, A. M. Deryabin, O. V. Zatsepin, A. L. Karmanov, S. N. Lebedev, G. N. Rykovanov, N. A. Teplykh, K. E. Khatuntsev
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia

7-4 14⁵⁵ **AN AGENT-BASED MODEL OF THE COVID-19 EPIDEMIC IN RUSSIAN FEDERATION**

Alexander M. Deryabin, V. V. Vlasov, O. V. Zatsepin, A. L. Karmanov, S. N. Lebedev, G. N. Rykovanov, A. V. Sokolov, N. A. Teplykh, K. E. Khatuntsev
FSUE “Russian Federal Nuclear Center – Zababakhin All-Russian Research Institute of Technical Physics”, Snezhinsk, Russia

7-13 15¹⁵ **ESTIMATION OF VIRAL EPIDEMIC BURDEN**

Alexey A. Romaniukha, K. A. Novikov, T. E. Sannikova
Marchuk Institute of Numerical Mathematics RAS, Moscow, Russia

7-5 15³⁵ **MATHEMATICAL THEORY OF EPIDEMICS**

Grigoriy D. Kaminsky¹, Yu. I. Prostov¹, M. Yu. Rostov¹, N. N. Pimenov¹, E. I. Veselova¹, V. V. Chernetsova², A. D. Vorontsov¹, E. V. Karamov³
¹FSBI «National Medical Research Center for Phthisiopulmonology and Infectious Diseases of the Ministry of Health of the Russian Federation, Moscow, Russia
²FSBEI HE «National Research University MPEI», Moscow, Russia.
³FSBI «National Research Center for Epidemiology and Microbiology named after N. F. Gamalei of the Ministry of Health of the Russian Federation, Moscow, Russia

16⁰⁰ *Coffee-break*

Co-chairs: Andrey V. Sokolov,
Yuri G. Rykov

7-14 16³⁰ **ON MODELING THE ECONOMIC ENVIRONMENT
IN ASSESSING THE CONSEQUENCES OF THE SPREAD OF EPIDEMICS**



Yuri G. Rykov
Keldysh Institute of Applied Mathematics RAS, Moscow, Russia

7-6 16⁵⁰ **QUANTUM COMPUTING CAPABILITY
FOR PROCESSING AND MODELING EPIDEMIOLOGICAL BIG DATA**



Olga Yu. Kolesnichenko
Keldysh Institute of Applied Mathematics RAS, Moscow, Russia

SECTION 7

- 7-7 17¹⁰ **«DATA FARM». COVID-19 CASE**
Sergey P. Levashkin
Research Laboratory of Artificial Intelligence of the Federal State Budget Educational Institution of
Higher Education «Volga State University of Telecommunications and Informatics», Samara, Russia

Section 7 APPLICATION OF PHYSICO-MATHEMATICAL TECHNOLOGIES TO SOLVING BASIC MEDICAL PROBLEMS

MAY 30, TUESDAY

Morning session

Hall 3

Co-chairs: Oleg V. Zatsepin,
Valeriya V. Chernetsova

Presentations

- 7-18 9⁰⁰ **EPIDEMIC CORRIDOR FOR INFECTIOUS DISEASE IN THE POPULATION MANAGEMENT**
Valeriya V. Chernetsova², Yu. I. Prostov¹, M. Yu. Rostov¹, E. I. Veselova¹,
N. N. Pimenov¹, E. V. Karamov³, G. D. Kaminsky¹
¹FSBI “National Medical Research Center for Phthisiopulmonology and Infectious Diseases of the Ministry of Health of the Russian Federation”, Moscow, Russia
²FSBEI HE “National Research University “MPEI”, Moscow, Russia
³FSBI “National Research Center for Epidemiology and Microbiology named after N. F. Gamalei of the Ministry of Health of the Russian Federation”, Moscow, Russia
- 7-3 9²⁰ **TREC FUNCTION MODEL IN HIV INFECTION**
Elena I. Veselova¹, Yu. I. Prostov², A. Yu. Rostov², N. N. Pimenov², V. V. Chernetsova¹,
E. V. Karamov³, D. A. Kudlai⁴, G. D. Kaminsky¹
¹FSBI «National Medical Research Center for Phthisiopulmonology and Infectious Diseases» of the Ministry of Health of Russia, Moscow, Russia
²Novosibirsk State University, Novosibirsk, Russia
³FSBI “National Research Center for Epidemiology and Microbiology named after N. F. Gamalei of the Ministry of Health of the Russian Federation”, Moscow, Russia
⁴FSBI «State Scientific Center Institute of Immunology», FMBA of Russia
- 7-11 9³⁵ **CALIBRATION UNIT OF MATHEMATICAL MODEL OF EPIDEMICS**
Mikhail Yu. Prostov¹, V. V. Chernetsova², Yu. I. Prostov¹, E. I. Veselova¹,
N. N. Pimenov¹, E. V. Karamov³, G. D. Kaminsky¹
¹FGBU “National Medical Research Center for Phthisiopulmonology and Infectious Diseases of the Ministry of Health of the Russian Federation”, Moscow, Russia
²FGBOU VO “National Research University “MPEI”, Moscow, Russia
³FSBI “National Research Center for Epidemiology and Microbiology named after N. F. Gamalei of the Ministry of Health of the Russian Federation”, Moscow, Russia
- 7-9 9⁵⁰ **DETERMINATION OF CHANGING PARAMETERS OF MATHEMATICAL MODELS FOR INFETIONS PROPAGATION**
Oleg V. Nagornov, A. S. Leonov, S. A. Tyuffin
National Research Nuclear University MEPhI, Moscow, Russia
- 7-19 10⁰⁵ **COMBINED STATEMENTS OF INVERSE PROBLEMS OF MEDICAL TOMOGRAPHY: NUMERICAL METHODS AND DEEP LEARNING**
Maxim A. Shishlenin, N. S. Novikov, S. I. Kabanikhin
Sobolev Institute of Mathematics SB RAS, Novosibirsk, Russia
Novosibirsk State University, Novosibirsk, Russia
Institute of Computational Mathematics and Mathematical Geophysics SB RAS, Novosibirsk, Russia

- 7-10 10²⁵ **SOLVING THE INVERSE PROBLEM OF DETERMINING THE CONTACT NUMBER OF R DURING THE PERIOD OF RISING INCIDENCE OF HEPATITIS C ASSOCIATED WITH INJECTION DRUG USE**
 Diana A. Semenova, N. N. Pimenov¹, Yu. I. Prostov¹, A. Yu. Prostov¹, E. I. Veselova¹, V. V. Chernetsova², E. V. Karamov³, G. D. Kaminsky¹
¹FGBU “National Medical Research Center for Phthisiopulmonology and Infectious Diseases” of the Ministry of Health of the Russian Federation, Moscow, Russia
²FGBOU VO “National Research University “MPEI”, Moscow, Russia
³FSBI “National Research Center for Epidemiology and Microbiology named after N. F. Gamaleya” Ministry of Health of the Russian Federation, Moscow, Russia
- 10⁴⁵ *Coffee-break*
- Co-chairs: Boris K. Vodolaga,
 Ekaterina Ya. Mozerova
- 7-8 11¹⁵ **HISTORY OF CHRONIC RADIATION EXPOSURE AND POSSIBLE CHANGES IN THE EFFICIENCY OF IMMUNOTHERAPY: TO THE STATEMENT OF THE PROBLEM**
 Ekaterina Ya. Mozerova
 Chelyabinsk Regional Clinical Center of Oncology and Nuclear Medicine, Chelyabinsk, Russia
- 7-12 11³⁵ **TOXIC EFFECTS DURING STEREOTACTIC RADIATION THERAPY IN PATIENTS WITH PROSTATE CANCER**
 Daria A. Rogacheva¹, M. M. Sarycheva^{1,2}, E. Y. Mozerova^{1,2}, A. A. Lozhkov¹, R. Y. Karabut¹, D. M. Timokhina¹, A. Y. Pecheritsa¹, Z. E. Sabelnikova¹
¹Chelyabinsk Regional Clinical Center of Oncology and Nuclear Medicine, Chelyabinsk, Russia
²South Ural State Medical University Ministry of Health of Russia, Chelyabinsk, Russia
- 7-15 11⁵⁵ **OWN EXPERIENCE IN THE USE OF STEREOTAXIC RADIOTHERAPY IN THE TREATMENT OF LOCALIZED KIDNEY CANCER IN INOPERATIVE PATIENTS**
 Marina M. Sarycheva, Zh. E. Sabelnikova, E. Ya. Mozerova, A. A. Lozhkov
 State autonomous institution of health care «Chelyabinsk regional clinical center of Oncology and nuclear medicine», Chelyabinsk, Russia
- 7-16 12¹⁵ **REPEATED RADIATION THERAPY IN THE TREATMENT OF PATIENTS WITH CONTINUED GROWTH OF PRIMARY HIGHLY MALIGNANT BRAIN GLIOMA**
 Marina M. Sarycheva
 GAUZ “Chelyabinsk Regional Clinical Center of Oncology and Nuclear Medicine”, Chelyabinsk, Russia
 Federal State Budgetary Educational Institution of Higher Education “South Ural State Medical University” of the Ministry of Health of Russia, Chelyabinsk, Russia
- 7-2 12³⁵ **PECULIARITIES OF PLANNING SYSTEM FOR STEREOTACTIC RADIOSURGERY AT NRC “KURCHATOV INSTITUTE” – PNPI**
 Lilit G. Vaganyan, V. N. Verbenko, D. L. Karlin, N. A. Kuzora, F. A. Pak, A. I. Khalikov
 FSBI “Petersburg Nuclear Physics Institute named after B. P. Konstantinov” of National Research Centre “Kurchatov Institute”, Gatchina, Russia
- 13⁰⁰ *Lunch*

Section 7P APPLICATION OF PHYSICO-MATHEMATICAL TECHNOLOGIES TO SOLVING BASIC MEDICAL PROBLEMS

MAY 29, MONDAY 14³⁰ TO 18⁰⁰
MAY 30, TUESDAY 8⁴⁰ TO 13⁰⁰

Foyer

Posters

7-1 SOME ASPECTS OF CREATING DECISION SUPPORT SYSTEMS BASED ON A NEURAL NETWORKS

Viktor I. Baluta

Keldysh Institute of Applied Mathematics RAS, Moscow, Russia

FINAL SESSION

FINAL SESSION

JUNE 2, FRIDAY

Afternoon session

Hall 1

Chairman: Vadim A. Simonenko

14³⁰ **GENERAL DISCUSSION
SPEECHES OF SECTION CHAIRMEN
SUMMARIZING**