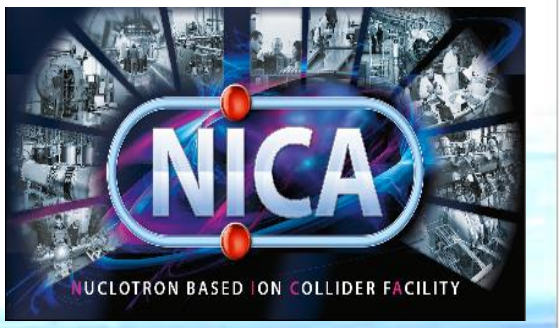
8th International Conference
"Distributed Computing and Grid-technologies in Science and Education"

JINR: Present Status and Long Range Strategy

Victor A. Matveev
JINR, Dubna

JINR – International Intergovernmental Organization joining 18 member states and 6 associated states. It is located in the science city ("naukograd") Dubna in 120 km to the north from Moscow



Special Economic Zone

Volga River

JINR

Sluice

12 meters Damb

Water Power Station

Volga-Moscow Channel

"Ivan'kovskoe" Water Storage or the "Moscow Sea"

“Science is essential to people. The country that does not advance it will inevitably turn into a colony”

Frédéric Joliot-Curie

On February 1 1957, JINR was registered by the United Nations

26 March 1956.
Moscow, the conference hall of the Presidium of AS USSR.

12:45 – the fourth sitting of the meeting adopted a resolution:

“The Final Statement of the meeting on the issue of establishment of the Joint Institute for Nuclear Research”.

It says: “…it is provided by the Agreement to establish an international scientific research organization under the title “the Joint Institute for Nuclear Research” with the location area in the USSR…” .

The settlement Novo-Ivankovo on the bank of Volga - river. The 1950s.

The science city -“naukograd” Dubna today

INTERNATIONAL CONFERENCE

25 Years of a New Era

26 MARCH 2018. INTERNATIONAL CONFERENCE CENTRE, DUBNA

The conference was dedicated to the 25th anniversary of a new era in the history of JINR (when a group of independent states entered JINR as its new Member States) and was held on the occasion of the 62nd anniversary of foundation of the Institute.

Members of the Committee of Plenipotentiaries of the Governments of the JINR Member States, representatives of Russian and foreign ministries and departments, ambassadors extraordinary and plenipotentiary and representatives of Embassies of foreign states in the Russian Federation, representatives of numerous media were among the participants of the conference.

JOINT DECLARATION

of participants of the international conference

1956 - 2018

JINR today

Being a worldwide centre for fundamental physics research, JINR sets ambitious goals, which assumes the corresponding high level of international cooperation and integration into the global and first of all the European research programmes and wide developing of the multidisciplinary research, including innovation studies and also the modern advanced educational programmes.

18 Member States
(incl. 5 from EU):

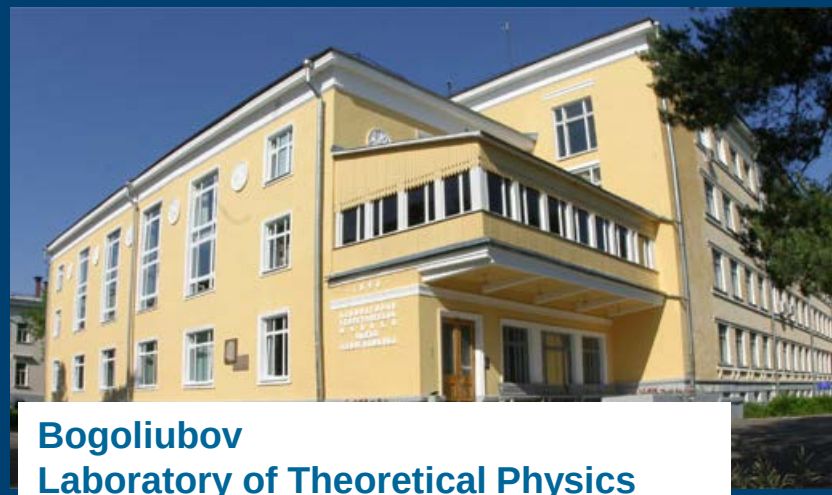
Azerbaijan
Armenia
Belarus
Bulgaria
Vietnam
Georgia
Kazakhstan
Cuba
DPRK
Moldova
Mongolia
Poland
Russia
Romania
Slovakia
Uzbekistan
Ukraine
Czech Republic

About 800 research partners in 62 countries

6 Associate Members (incl. 3 from EU):
Hungary, Germany, Egypt, Italy, Serbia, SAR

Dzhelepov Laboratory of Nuclear Problems

Veksler and Baldin
Laboratory of High Energy Physics



Bogoliubov
Laboratory of Theoretical Physics

JINR Laboratories

Laboratory of Information Technologies

Flerov
Laboratory of Nuclear Reactions

Frank Laboratory of Neutron Physics

Laboratory of Radiation Biology

An international staff of JINR

JINR's staff members - 4987

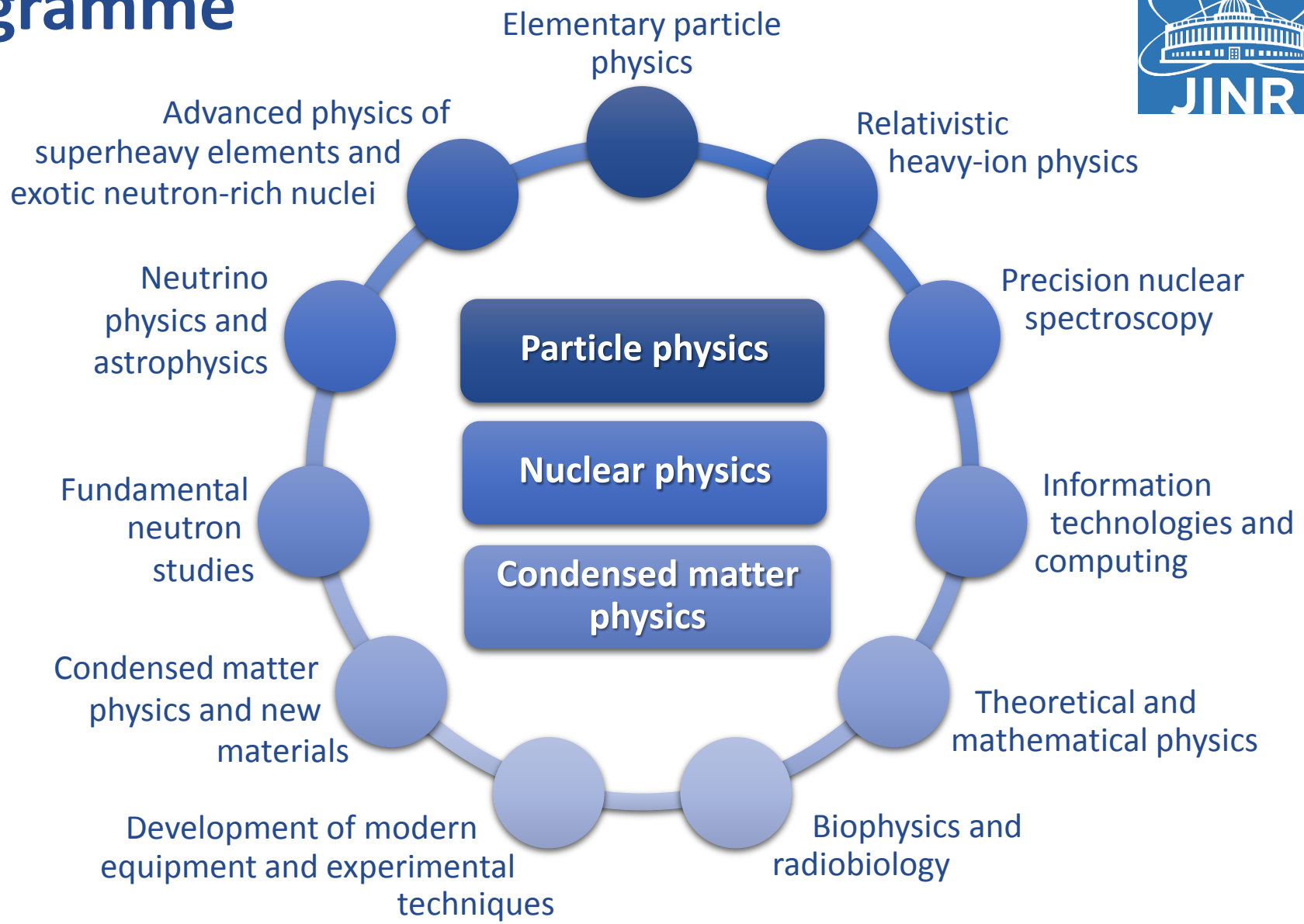
researchers - 1142

including from the Member States - 415 (excluding Russia)

Doctors and PhD - 814

JINR Research Programme

The Seven Year Plan for 2017-2023



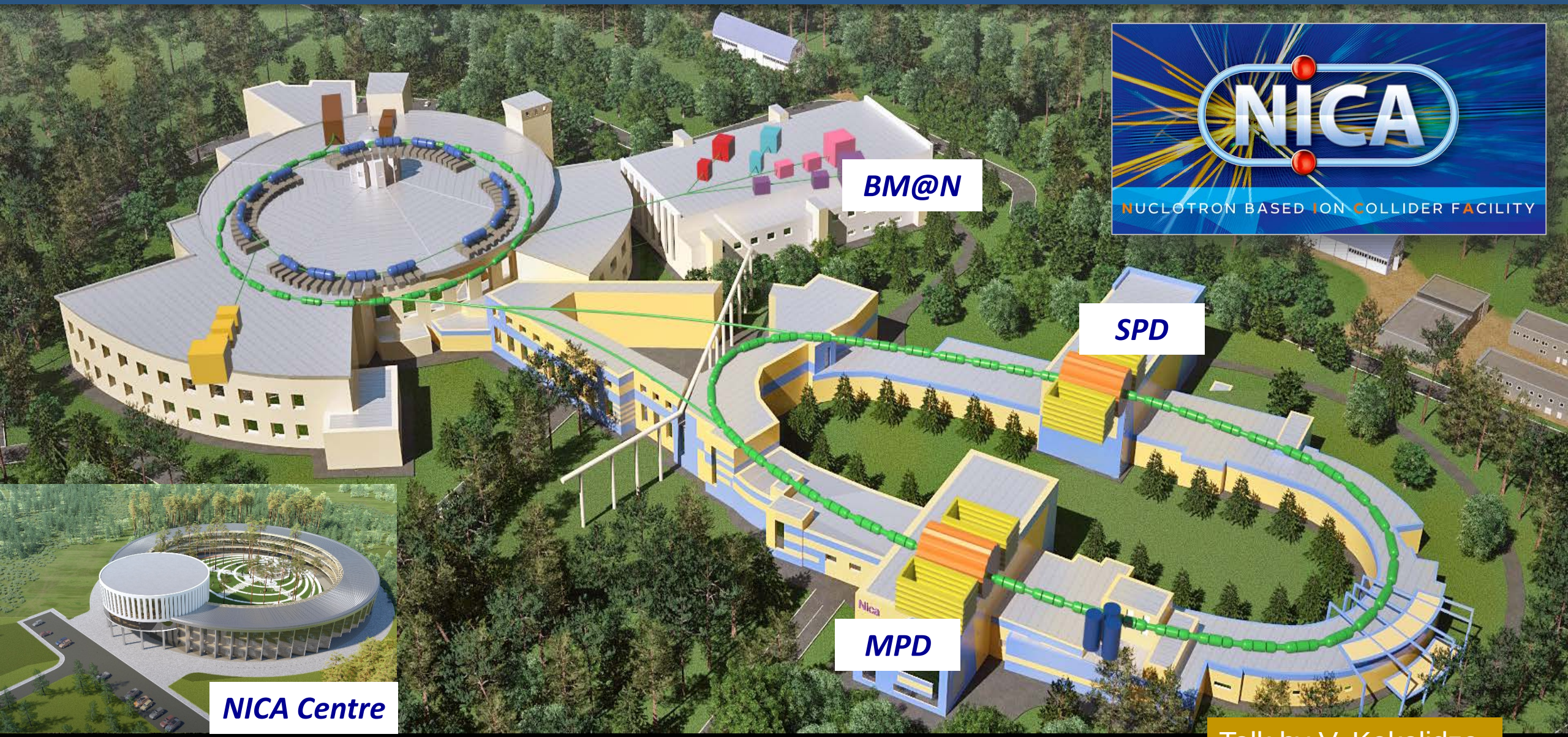
The Long Range Strategy up to 2030

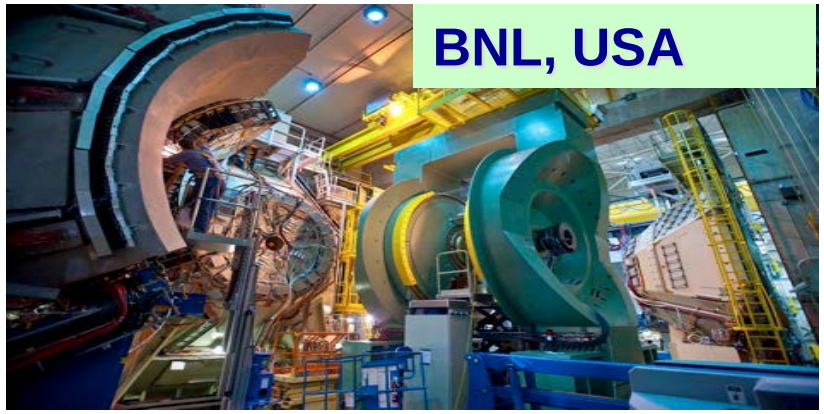
The current 7-Year Plan determines that the strategy of the development of our Institute will be aimed mainly at:

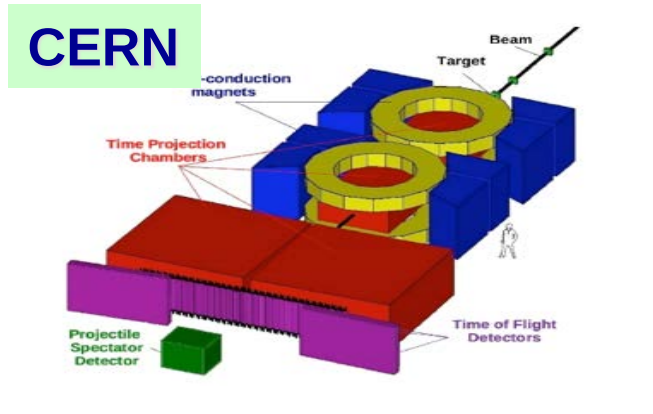
- Realizing new world-class projects at the frontiers of modern physics on the basis of high scientific requirements and professional standards and traditions
- Extending international cooperation around the JINR basic facilities, further integration of these facilities into the European and worldwide research infrastructures
- Attracting new countries to the JINR family and further expending worldwide cooperation with JINR partners
- Maintaining the general infrastructure and “modus operandi” of JINR at the best internationally recognized level

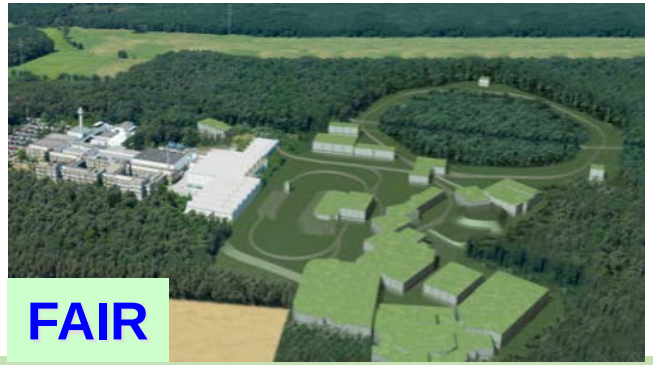
Development of JINR facilities

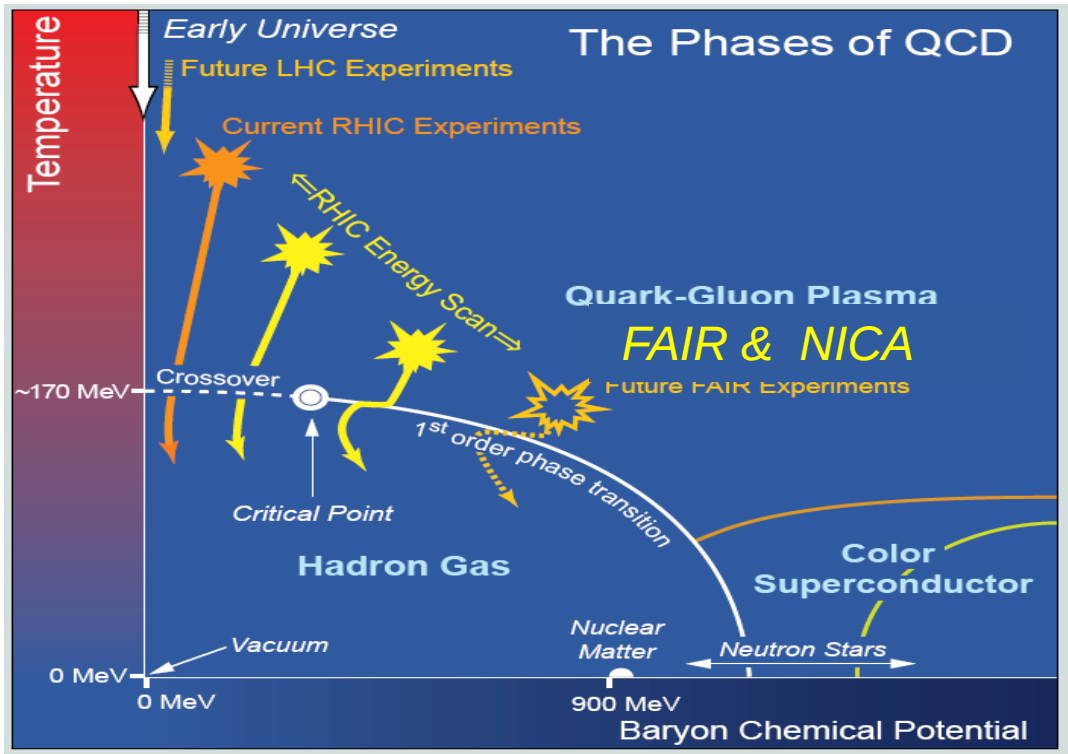
NICA Complex: mega-science project at JINR











NICA has the most interesting energy diapason ($\sqrt{s_{NN}}$ ~ 10 GeV) corresponding to the region of the maximal density of baryonic or nuclear matter which nobody has had yet achieved in the laboratories. Main Goal - studying the critical phenomena and phase transitions happened to appear in the Early Universe and presumably existing in the Neutron Stars.

- ✓ ***FAIR (GSI, Darmstadt) – Fixed target experiments***
- ✓ ***NICA (JINR, Dubna) – Collider experiments***

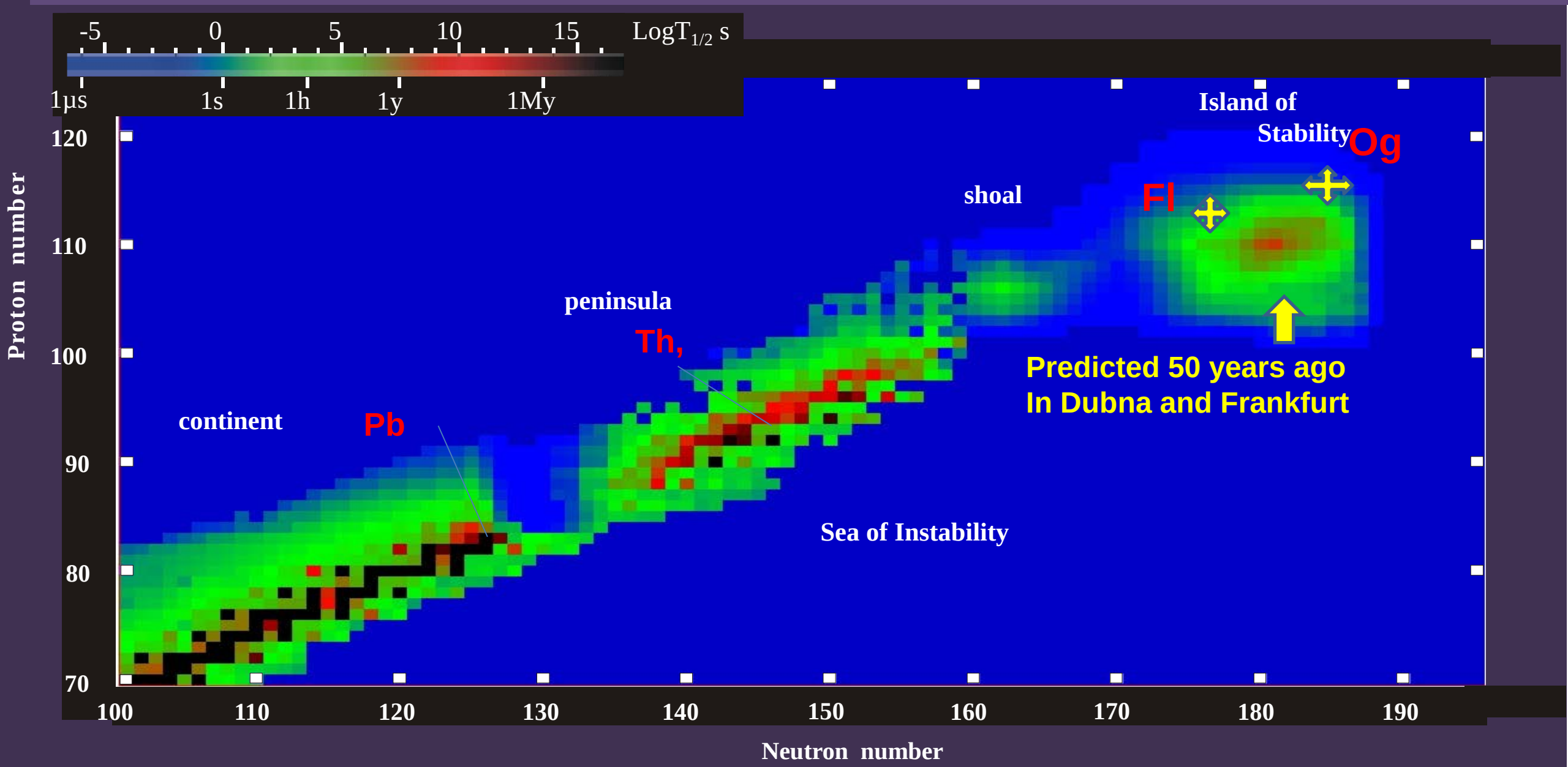
NICA civil construction

MPD Hall will be ready for equipment installation at the end of 2018

Line for assembling and cryogenic testing of superconducting magnets for the NICA Complex and FAIR Project

“NICA Center”
Contract for the design is concluded

New lands Search for new Island of Stability



D.I. Mendeleev's Periodic table of elements

Бор 5	Углерод 6	Азот 7	Кислород 8	Фтор 9	Неон 10
B 10,81 Boron	**C** 12,011 Carbon	**N** 14,007 Nitrogen	**O** 15,999 Oxygen	**F** 18,998 Fluorine	**Ne** 20,18 Neon
Алюминий 13	Кремний 14	Фосфор 15	Сера 16	Хлор 17	Аргон 18
Al 26,982 Aluminum	**Si** 28,085 Silicon	**P** 30,974 Phosphorus	**S** 32,06 Sulfur	**Cl** 35,45 Chlorine	**Ar** 39,948 Argon
Никель 28	Медь 29	Цинк 30	Галлий 31	Германий 32	Мышьяк 33	Селен 34	Бром 35	Криптон 36
Ni 58,693 Nickel	**Cu** 63,546 Copper	**Zn** 65,38 Zinc	**Ga** 69,723 Gallium	**Ge** 72,630 Germanium	**As** 74,922 Arsenic	**Se** 78,971 Selenium	**Br** 79,904 Bromine	**Kr** 83,798 Krypton
Палладий 46	Серебро 47	Кадмий 48	Индий 49	Олово 50	Сурьма 51	Теллур 52	Иод 53	Ксенон 54
Pd 106,42 Palladium	**Ag** 107,87 Silver	**Cd** 112,41 Cadmium	**In** 114,82 Indium	**Sn** 118,71 Tin	**Sb** 121,76 Antimony	**Te** 127,60 Tellurium	**I** 126,90 Iodine	**Xe** 131,29 Xenon
Платина 78	Золото 79	Ртуть 80	Таллий 81	Свинец 82	Висмут 83	Полоний 84	Астат 85	Радон 86
Pt	**Au** 196,97 Gold	**Hg** 200,59 Mercury	**Tl** 204,38 Thallium	**Pb** 207,2 Lead	**Bi** 208,98	**Po** [209]	**At** [210]	**Rn** [222]
Дармштадтий 110	Рентгений 111	Коперниций 112	Нихоний 113	Флеровий 114	Московий 115	Ливерморий 116	Теннессин 117	Оганесон 118
Ds [281] Darmstadtium	**Rg** [282] Roentgenium	**Cn** [285] Copernicium	**Nh** [286] Nihonium	**Fl** Flerovium	**Mc** Moscovium	**Lv** Livermorium	**Ts** Tennessine	**Og** Oganesson

105
Db
Dubnium

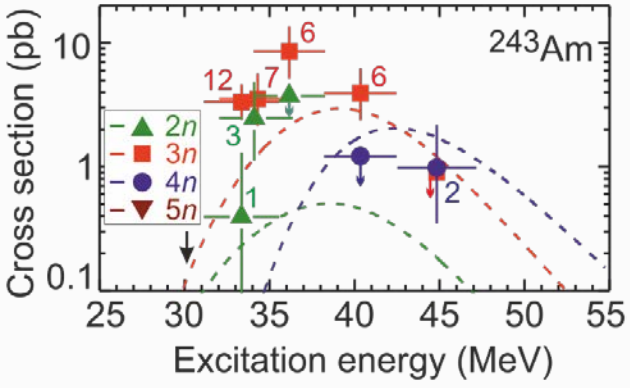
Oganessian

Superheavy Elements Factory

DC-280 cyclotron: autonomous launching and tuning works

Gas-filled recoil separator (GFRS-2): assembled

Existing data for ^{48}Ca+^{243}Am



The most critical tasks for the end of 2018 – beginning of 2019:

- certifying;
- full commissioning;
- preparing and conducting day-first test experiments (^{48}Ca+^{243}Am);

Talk by M. Itkis

2nd half of 2019:

- preparing and conducting experiment on synthesis of element 119 in the **^{50}Ti+^{249}Bk** reaction.

The General Assembly of the United Nations

(72 sessions)

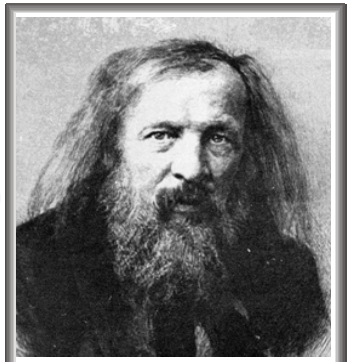
at its 74 Plenary Meeting on 20 December 2017

has proclaimed

2019 as the International Year

of the Periodic Table of Chemical Elements

(IYPT 2019)



D.I. Mendeleev
1834 - 1907

2019 – International Year of the Periodic Table of Chemical Elements

United Nations A/72/422/Add.2

General Assembly

Distr.: General
7 December 2017

Original: English

JINR Directorate invites all partners of the Institute to participate in the JINR's events dedicated to the International Year of the Periodic Table of Chemical Elements

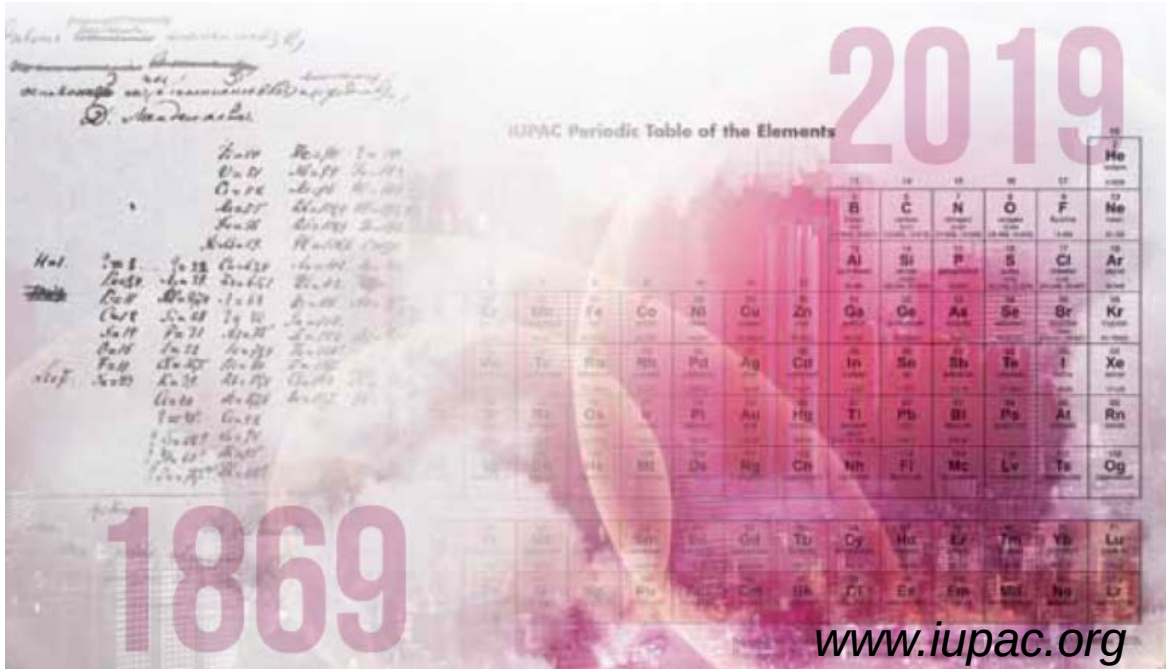
Dubna, May 30-31, 2019:

International symposium

"The present and the future of the Periodic Table of Chemical Elements"

Co-chairmen:

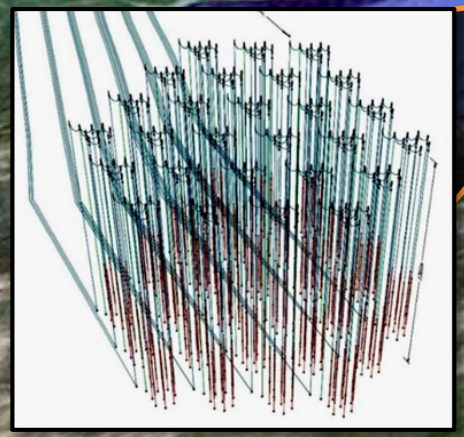
V.A. Matveev, Yu.Ts. Oganessian, S.N. Dmitriev

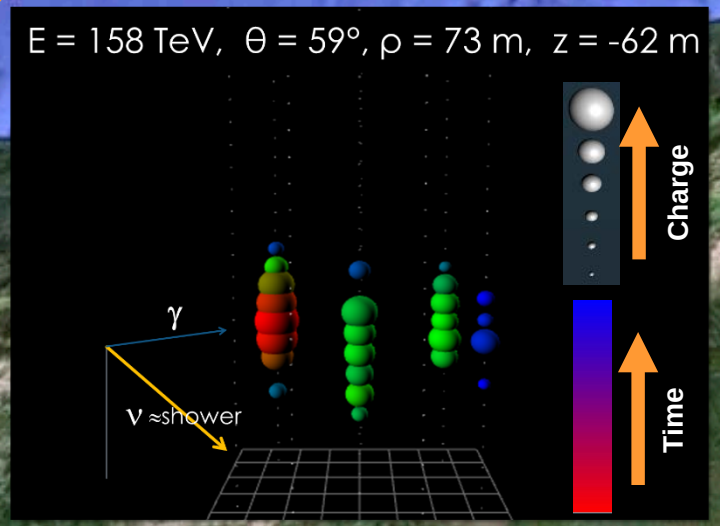


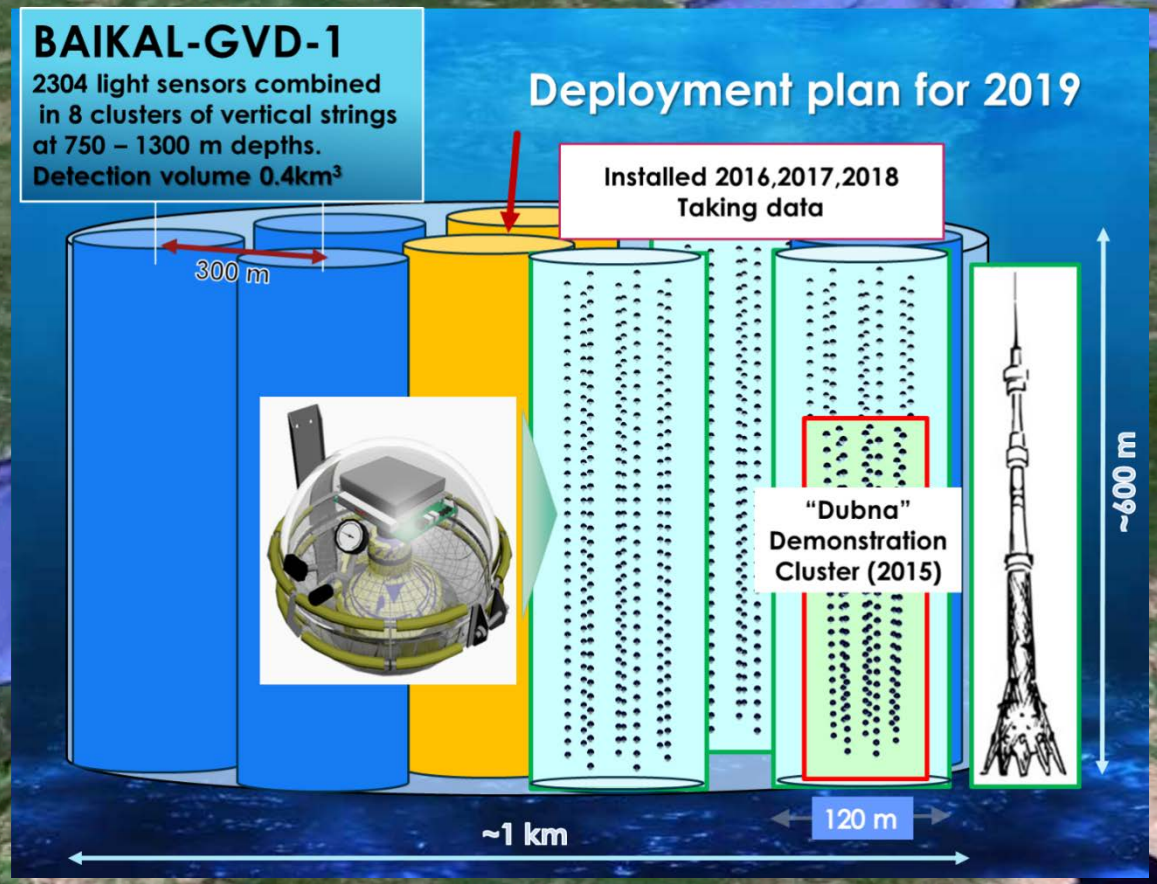
Neutrino programme: Baikal-GVD Project

Central Physics Goals:

- Investigate Galactic and extragalactic neutrino “point sources” in energy range > 3 TeV
- Diffuse neutrino flux – energy spectrum, local and global anisotropy, flavor content
- Transient sources (GRB, binaries, …)
- Dark matter – indirect search
- Exotic particles – monopoles, Q-balls, nuclearites, …





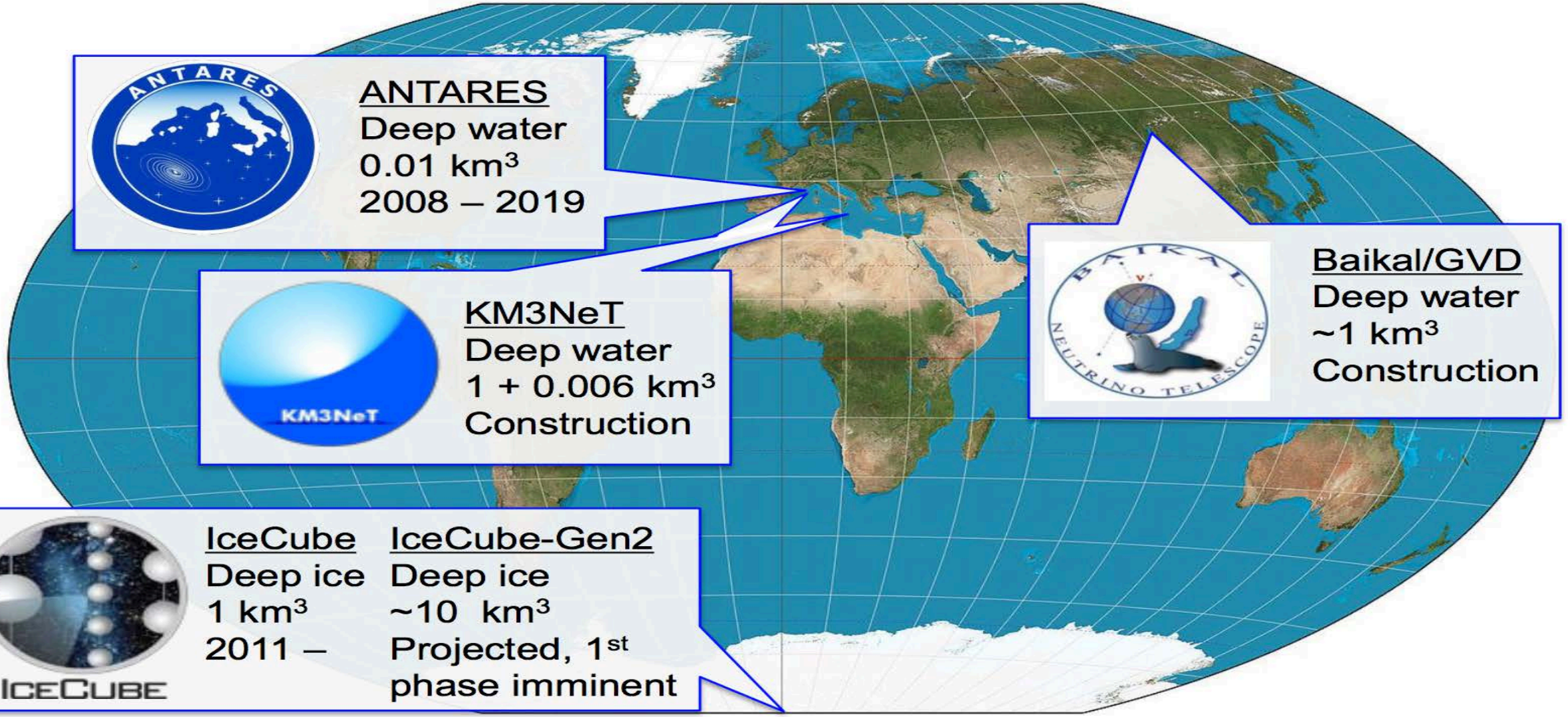


	GVD-1
OMs	2304
Clusters (8 Strings)	8
Depths, m	750 – 1275
Eff. Volume (E_{SH} > 100 TeV)	0.4 km³

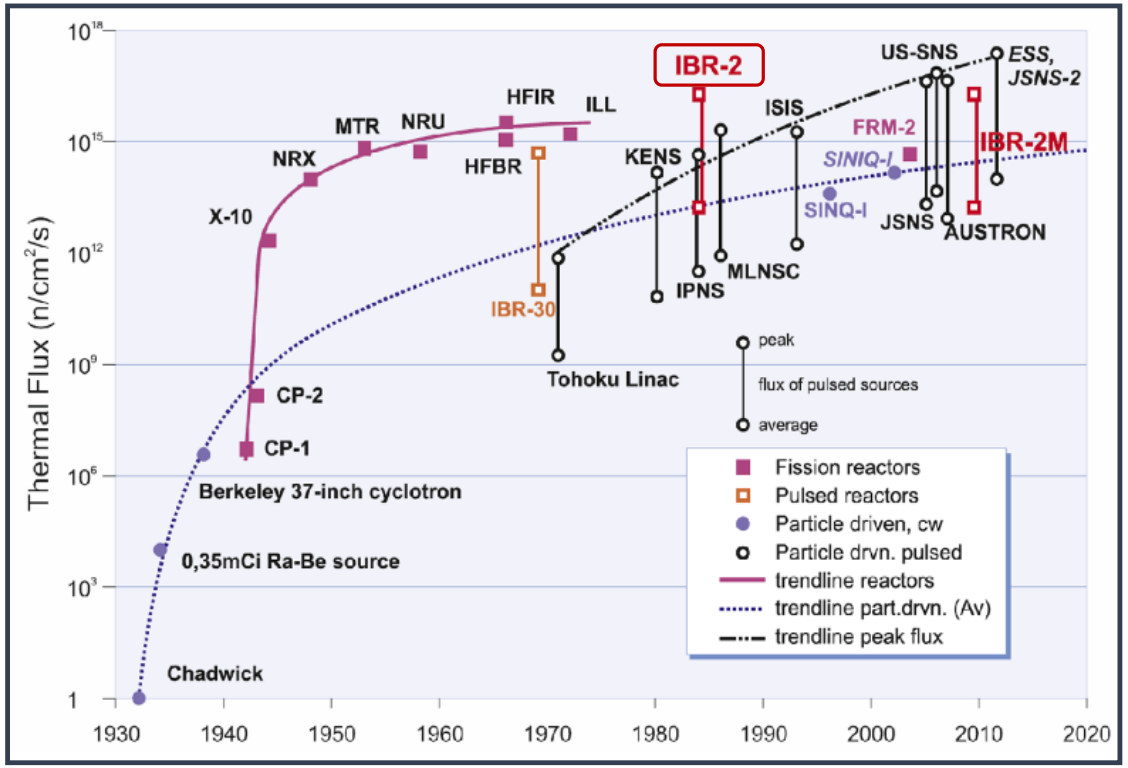
Directional resolution
Cascades: ~3°
Muons: 0.25° - 0.5°

The neutrino telescope world map 2018

ERLANGEN CENTRE FOR ASTROPARTICLE PHYSICS



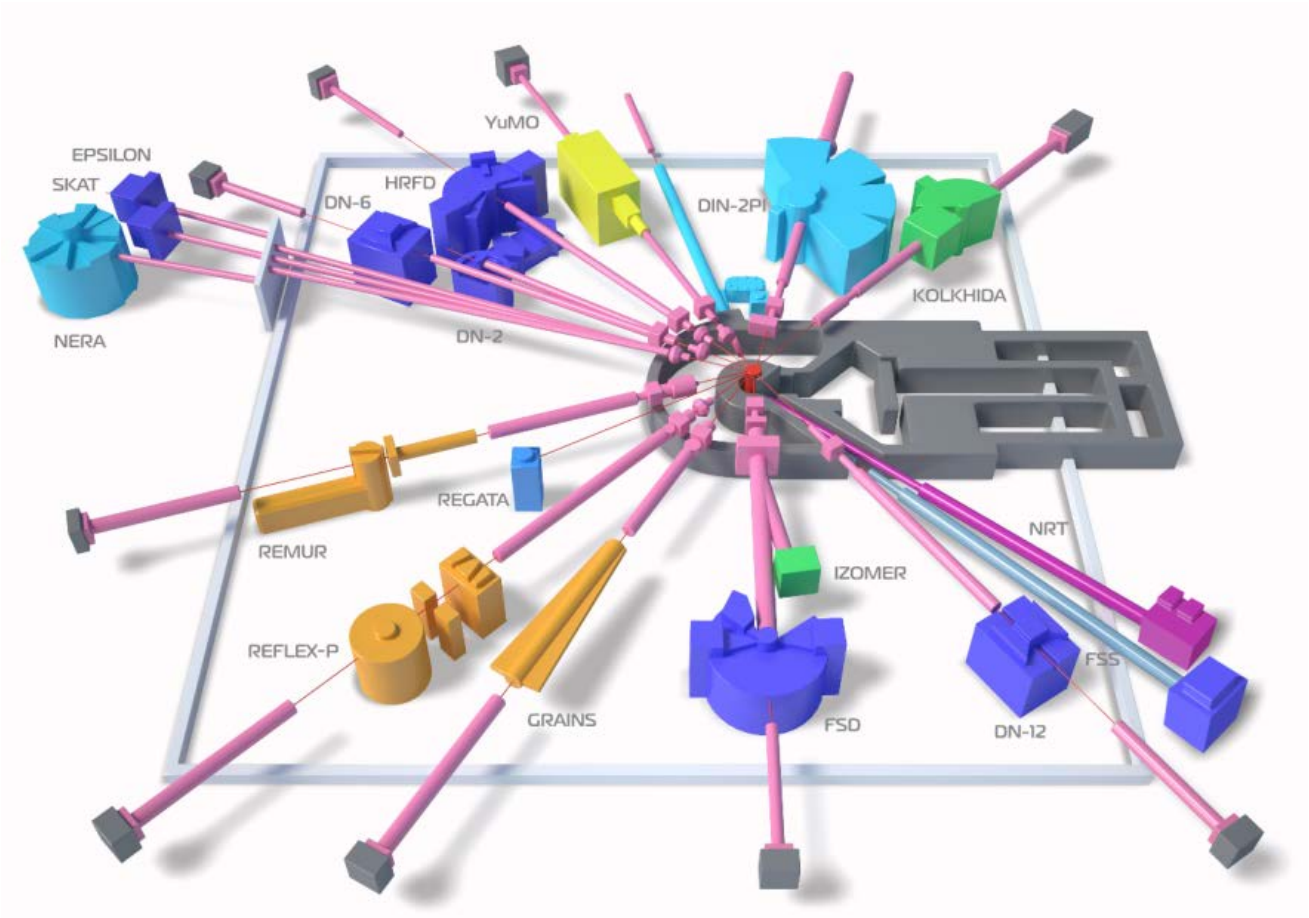
IBR-2 pulsed research reactor



mean power: ***2 MW***
pulse frequency: ***5 Hz***
pulse width for fast neutrons: ***200 μs***
thermal neutrons flux density on the moderator surface: 10^{13} *n/cm²/s*
maximum in pulse: 10^{16} *n/cm²/s*

IBR-2 is included in the 20-year European strategic research program in the field of neutron scattering

Spectrometer complex of the IBR-2 reactor



A world-friendly User Programme

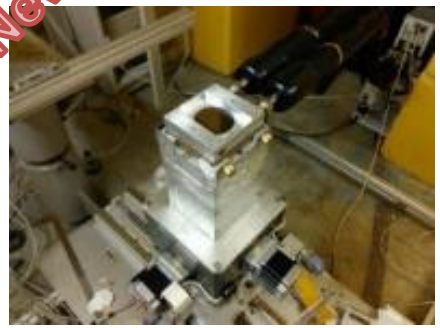
DN-6 diffractometer

New

microsamples under extreme conditions (P ≤ 0.5 Mbar)

GRAINS reflectometer

New



soft and liquid interfaces

FSS spectrometer

New

bulk industrial components
new advanced materials

NRT spectrometer

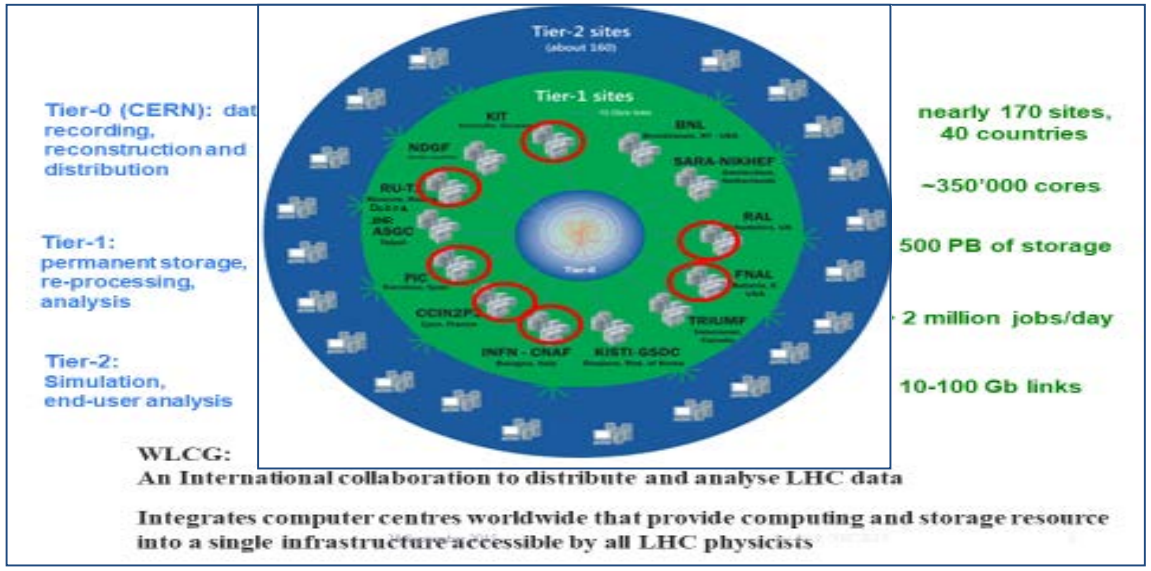
New

radiography
tomography

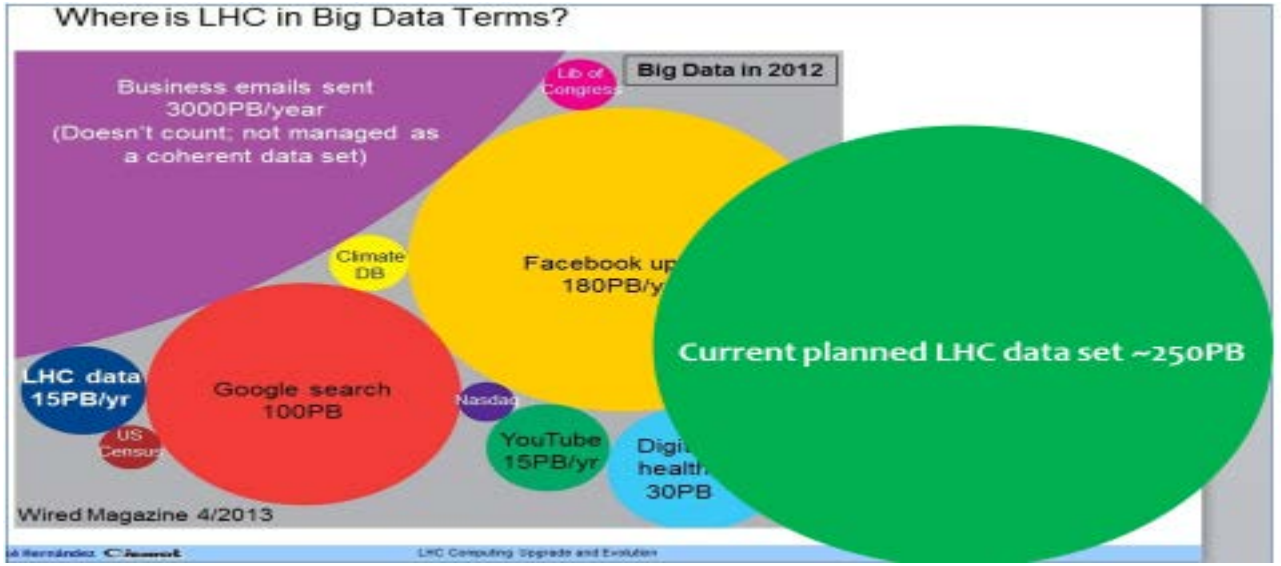
Modern Computing in HEP

Nowadays, any large-scale project will fail without a distributed infrastructure and Big Data Analytics for data processing.

The Worldwide LHC Computing Grid (WLCG)

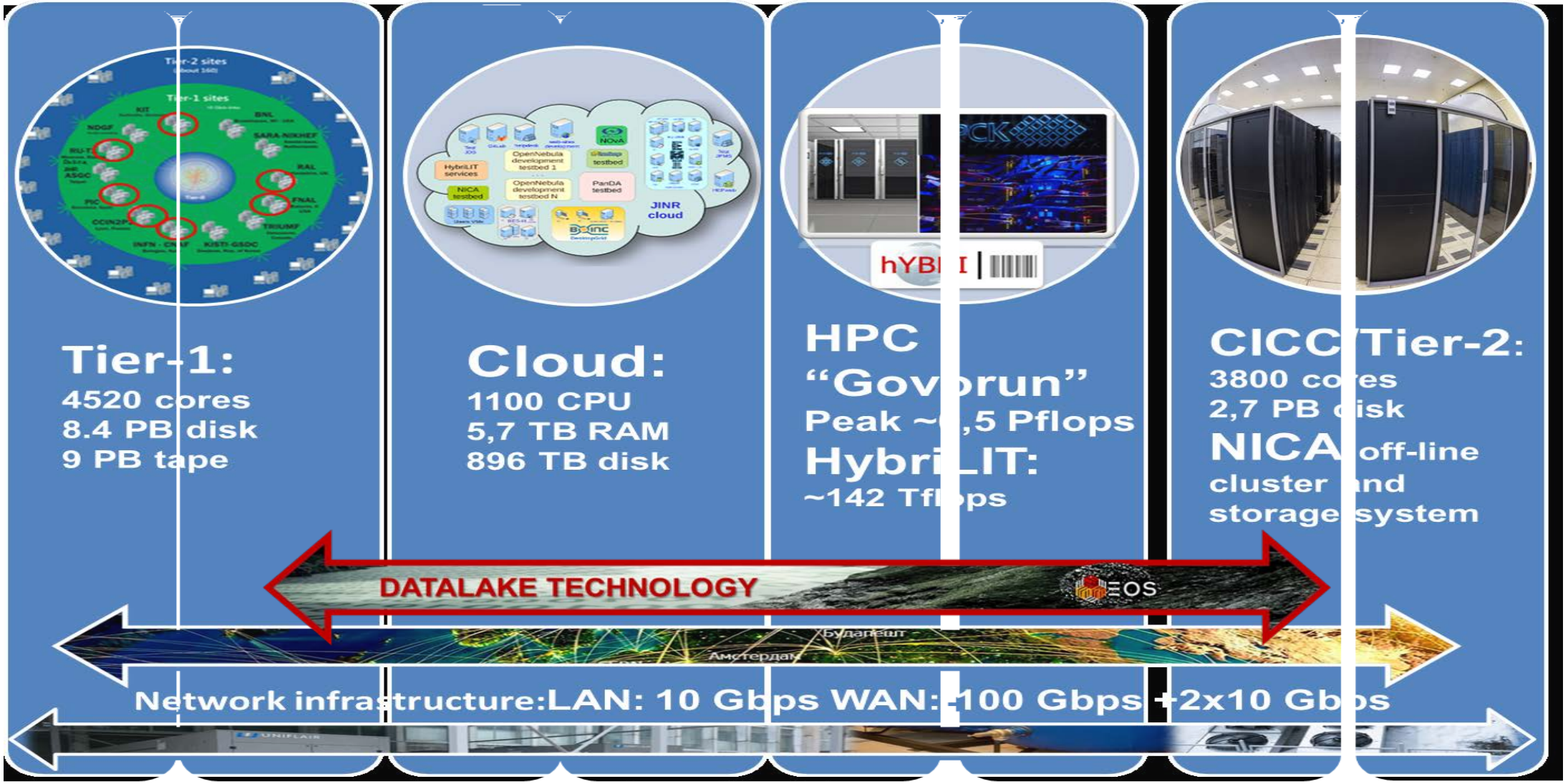


Entry into the Big Data era



On a festivity dedicated to receiving the Nobel Prize for discovery of Higgs boson, former CERN Director-General Prof. Rolf Dieter Heuer directly called the grid-technologies one of three pillars of success (alongside with the LHC accelerator and physical installations).

Multifunctional Information and Computing Complex
Main components



LIT IT-infrastructure is the one of JINR basic facilities

New facility at JINR – supercomputer “GOVORUN”

ЛИТ

BLTP

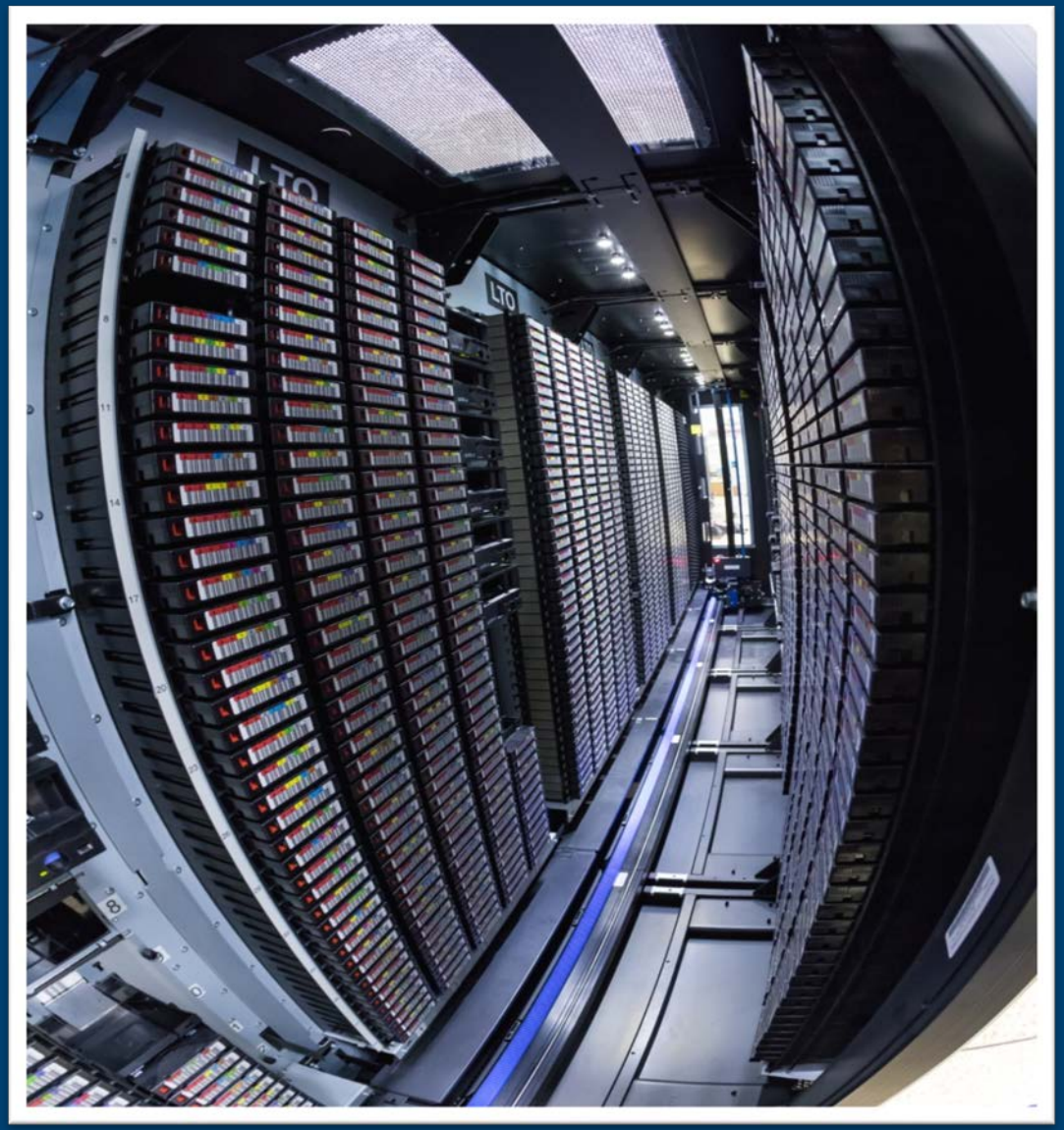
NICA

JINR supercomputer ‘Govorun’ – revolutionary ultra-high dense HPC solution


PCK


PCK

JINR Tier1 for CMS commissioning in 2015



Now

- **4520 cores**
- **9 PB tapes**
- **8,2 PB disk**
- **100% reliability and availability**

The main fields of activity are:

Student programmes

- BS and MS theses at JINR
- International Student Practices
- Summer Student Programme
- Conferences for young scientists and specialists

Science popularization

- Scientific Schools for physics teachers at JINR and CERN
- Visits to the JINR labs for students
- Open educational resource: edu.jinr.ru
- Science festivals

Skill improvement

- Advanced practices
- Attachment of degree-seekers
- Engineering training
- Professional courses
- Foreign language courses

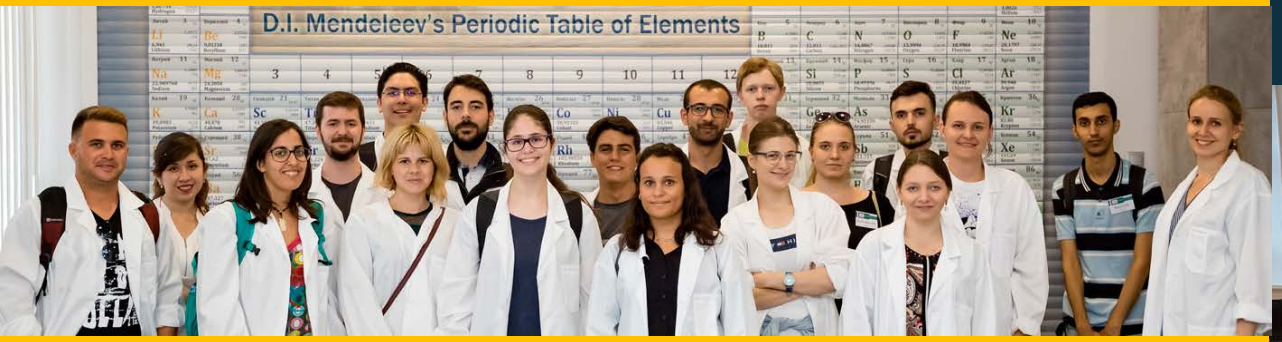
To ensure the effective use of JINR facilities and expertise

To train highly qualified scientists and engineers from the Member States

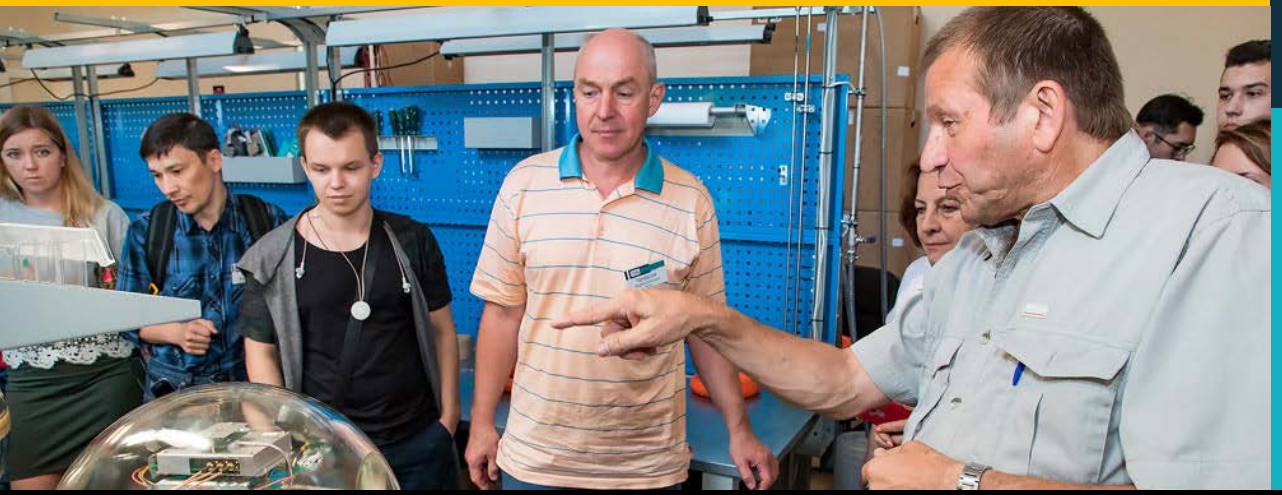
To bring up-to-date scientific knowledge to the general public and to highlight recent scientific achievements of JINR

JINR UC in 2018: the most important events and results

Student programmes



- 143 students participated in International Student Practices (1437 since 2004)
- 63 students participated in Summer Student Programme (191 since 2014)
- 54 students participated in the School on Nuclear Methods held in Montenegro



Practices and skill improvement

- 149 staff members completed courses of professional training
- 145 people studied foreign languages
- 28 degree-seekers are attached to JINR
- 25 people were trained at Engineering group

Science popularization

- 22 teachers and 11 school students participated in Scientific School at JINR
  24 teachers will participate in CERN school in November (704 since 2009)
- Over 700 school and university students visited the JINR labs

NEW !

Dubna School of Engineering: joint initiative of JINR and Dubna State University

School's Objectives:

✓ ***attracting most talented students***

✓ ***modern technical education and hand-on training of engineers***

to meet challenges in realizing present and future JINR projects

Guidelines of the School:

PRACTICAL and FUNDAMENTAL education: ***broad practical skills, deep math, IT, training to work at JINR present and new basic facilities***

ELITE education: ***selection of most talented students of Dubna University***

INTENATIONAL education: ***attraction of students from JINR Member States***

HIGH-LEVEL teaching staff ***from JINR and leading universities***

Creation of MODERN educational INFRASTRUCTURE:
joint efforts of JINR and Dubna University, using dedicated JINR facilities at UC

Supported by JINR Scientific-Technical Council 16.06.2017, by Scientific Council of Dubna State University 26.01.2018

Joint programme by Dubna city and JINR under support of the Moscow region government

NEW !

Organizing in Dubna an International Lyceum for gifted school children with the strong learning courses on physics, mathematics, IT and biology

- First lyceum in Russia with bilingual education.
- Unique modern training laboratories with the newes equipment.
- Teachers are world-class specialists practicing in physics, mathematics, information technology, biology.

On 5 June, 2018
the opening ceremony
of a modernized jogging track,
a bicycle rental and renovated gym
of the JINR Stadium “Nauka”
was held.

In in the forefront of the photo (from left to right): Head of the Dubna city M.N. Danilov, JINR Director V.A. Matveev, Chairman of the Dubna Council of Deputies S.A. Kulikov

The JINR’s Stadium “Nauka” is brought to a new level

January – July 2018: more than 1.5 thousands of visitors


Multimedia exposition


Public lectures and seminars


Lab of scientific experiments for schoolchildren


Exhibitions


Excursions


Funny science for anyone


Physics facility models

Renovated Museum of History of Science and Technology of JINR

01 August 2018

JINR Future: *Long Range Strategy Plan for up to 2030*

- **NICA – II and III (SC Nuclotrone, HL-NICA)**
- **DRIBS-III (Dubna Radioactive Beam Complex)**
  (Super-heavy Elements and Exotic Nuclei studies)
- **DERICA (Dubna Electron Radioactive Ion Collider fAcility)**
- **Physics with the ultra cold neutrons at IBR-2M**
- **Super booster "NEPTUNE"**
  (SC proton beam initiated pulsed Np-237 Neutron Reactor)
- **Baikal –GVD –II Neutrino Telescope (above 1 km*3)**
- **Hadrons Therapy research complex**

Science Bringing Nations Together

(1860 – 1904)

"Science cannot be national,
in the same way
that a multiplication table
cannot be national.
If a science becomes national
it ceases to be a science".

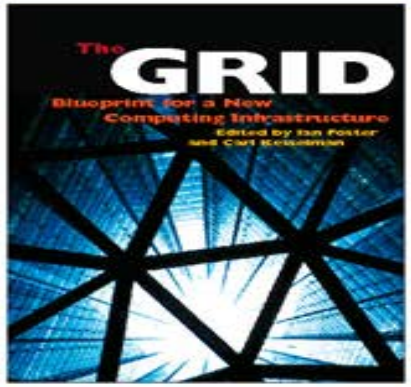
Anton Chekhov


Thank you !
Спасибо !
Our colleagues in member–states are saying:
“JINR in Dubna – it is our common house
on the banks of the great Russian river Volga”
Welcome to JINR!

Modern Computing at JINR

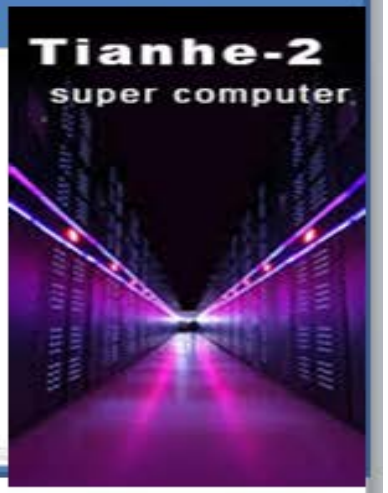
Grids

- Collaborative environment
- Distributed resources

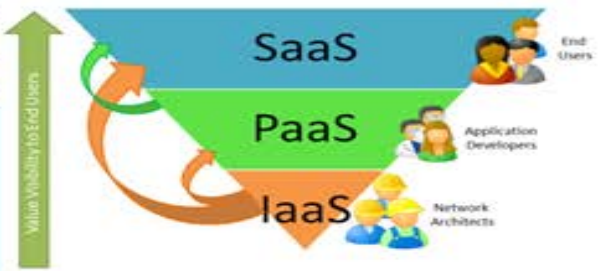


Supercomputers

Titan System (Cray XK7)			
Peak Performance	27.1 PF 18,688 compute nodes	24.5 PF GPU	2.6 PF CPU
System memory	710 TB total memory		
Interconnect	Gemini High Speed Interconnect	3D Torus	
Storage	Lustre Filesystem	32 PB	
Archive	High-Performance Storage System (HPSS)	29 PB	
I/O Nodes	512 Service and I/O nodes		



Clouds



Big Data

- *Volume*
- *Velocity*
- *Variety*

Honorary Fellow of the Royal Society of Chemistry

Closing of the UK-Russia Year of Science and Education
(13 March 2018, London, UK)

The Lomonosov Gold Medal (the highest prize of RAS)

Laureates: Yu. Oganessian and B. Jonson
Annual Joint RAS Meeting
(30 March 2018, Moscow, Russia)

2019 – International Year of the Periodic Table of Chemical Elements

United Nations A/72/422/Add.2

General Assembly

Distr.: General
7 December 2017

Original: English

30. *Reiterates its call for* continued collaboration between United Nations entities and other international organizations, civil society and the private sector in implementing the outcomes of the World Summit on the Information Society, with a view to putting the potential of information and communications technologies at the service of development through policy research on the digital divide and on new challenges of the information society, as well as technical assistance activities, involving multi-stakeholder partnerships;

31. *Proclaims* the year beginning on 1 January 2019 the International Year of the Periodic Table of Chemical Elements to enhance global awareness of, and to increase education in, the basic sciences, with special attention to the countries of the developing world, to improving the quality of everyday life and, inter alia, for future advances in research and development, and invites the United Nations Educational, Scientific and Cultural Organization to serve as the lead agency for the International Year, in collaboration with other relevant agencies, within existing resources;

32. *Calls upon* the relevant organizations of the United Nations system, within their respective mandates and resources, to ensure that no one is left behind and no country is left behind in the implementation of the present resolution;

33. *Requests* the Secretary-General to submit to the General Assembly at its seventy-fourth session a report on the implementation of the present resolution and recommendations for future follow-up, including lessons learned in integrating

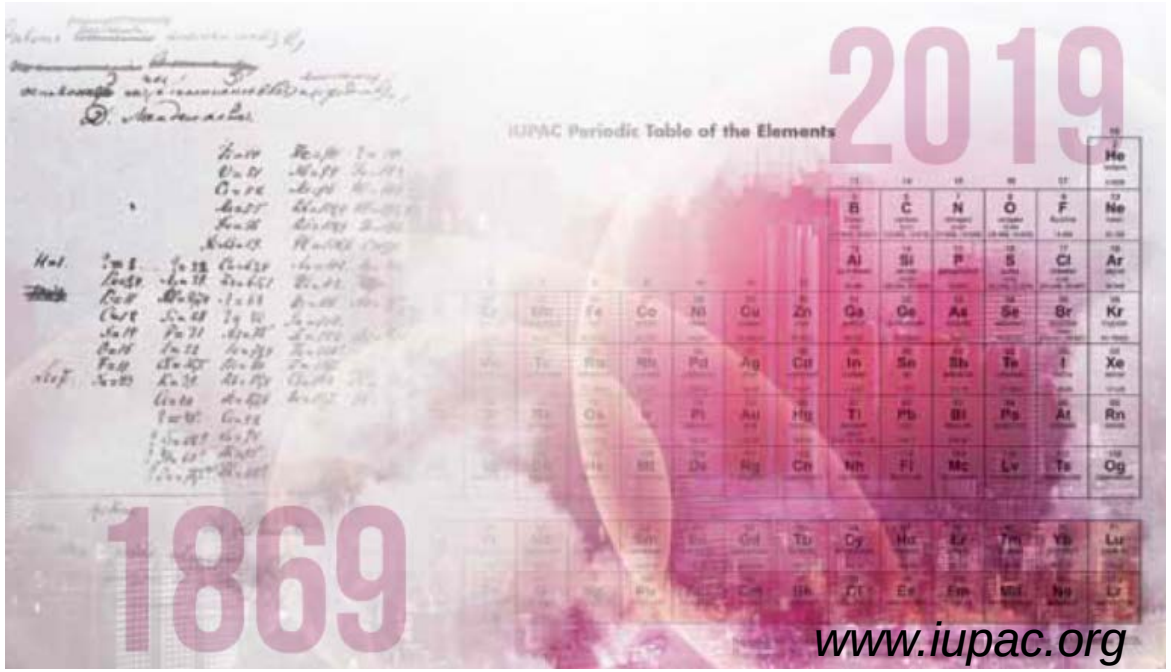
Dubna, May 30-31, 2019:

International symposium

"The present and the future of the Periodic Table of Chemical Elements"

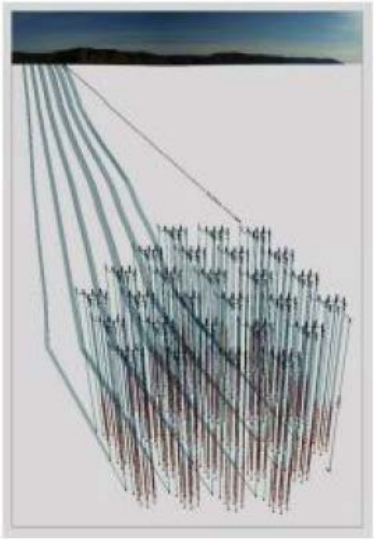
Co-chairmen:

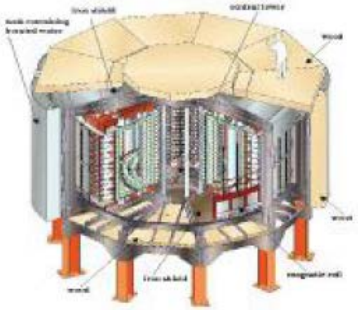
V.A. Matveev, Yu.Ts. Oganessian, S.N. Dmitriev

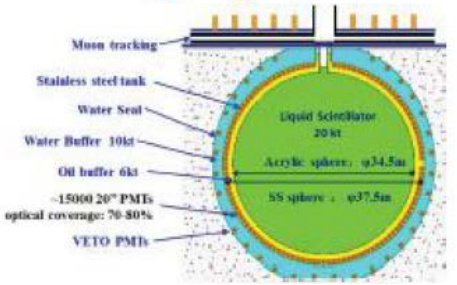


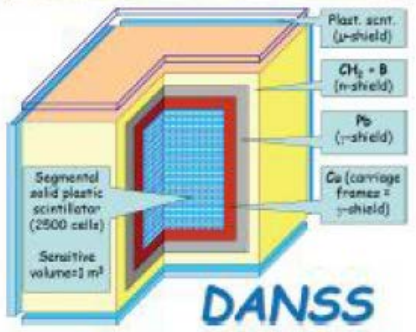
JINR priorities in 2017–2023:

- **Neutrino programme:**
  research on neutrino astrophysics with unique Baikal-GVD neutrino telescope, basic and applied research with antineutrino beams of the Kalinin nuclear power plant, participation, due to the decisive contributions of JINR, in major international experiments (JUNO, SuperNEMO, NOvA, EURICA, DS, etc.), and establishment of JINR's corresponding research infrastructure at the most advanced level.









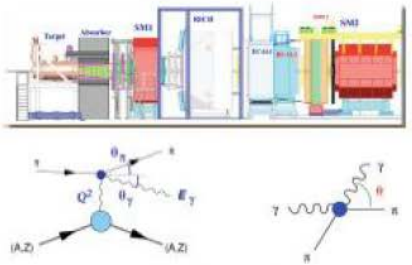
JINR priorities in 2017–2023:

- in **Perturbative and nonperturbative QCD studies**: the goals are

  a) to participate in major international experiments on nucleon and nuclear structure research (COMPASS, BESS-3, PANDA, etc.) with the aim to obtain decisive information for a better understanding of QCD properties, hadron spin structure, etc.;

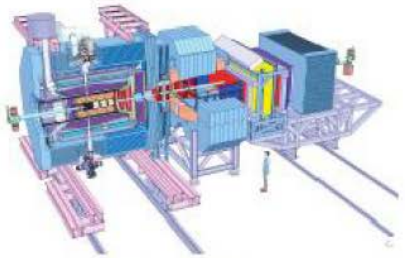
  b) to continue basic research on neutron physics with IBR-2;

  c) within an international collaboration on external sources of ultracold neutrons, to measure the key parameters of the neutron — beta decay, electric dipole moment, etc.



COMPASS

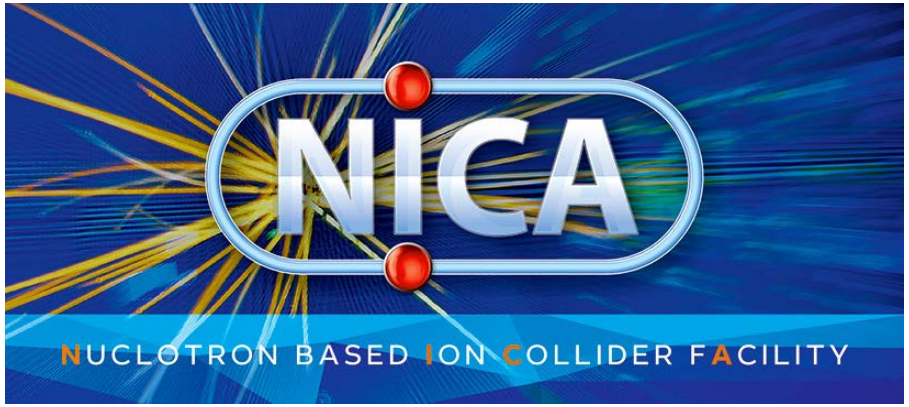
BESS-3



PANDA

UCN setup

JINR priorities in 2017–2023:

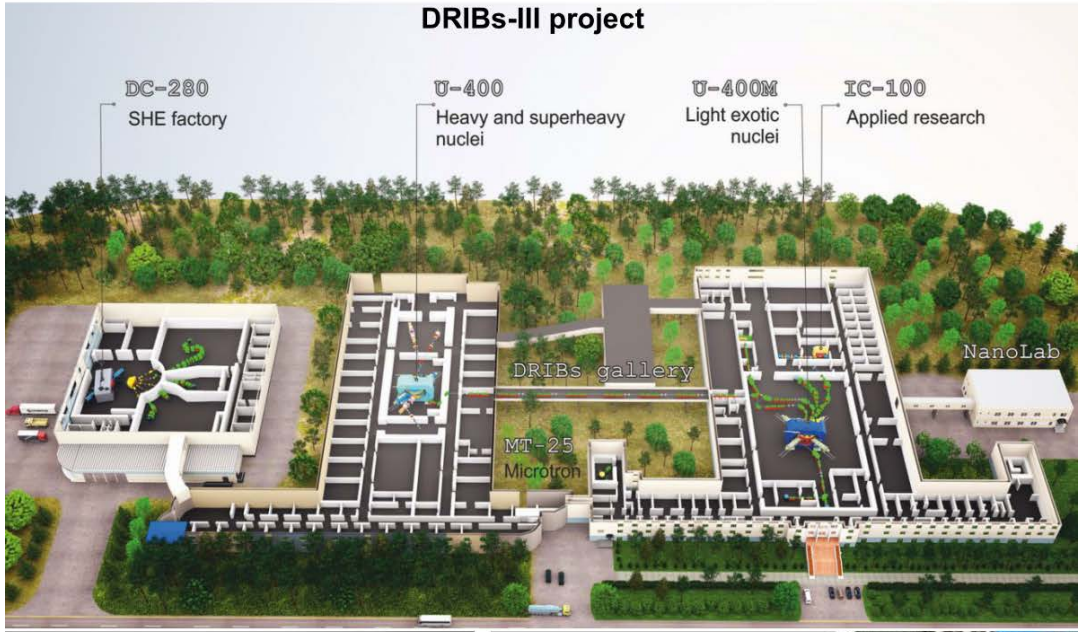


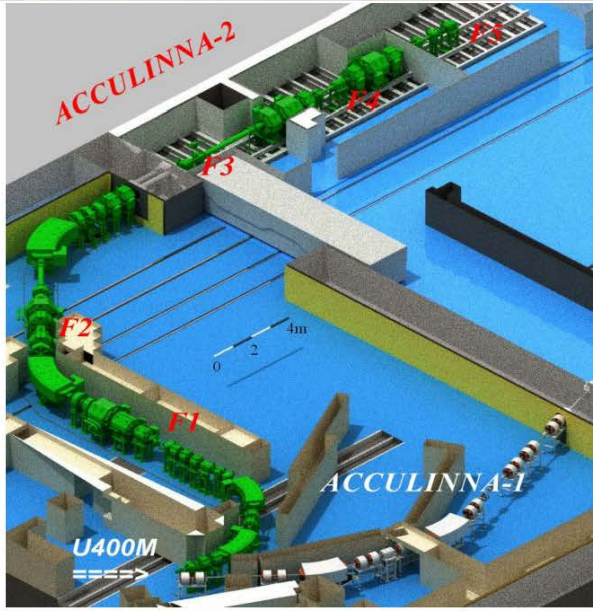
- in **Relativistic physics of atomic nuclei (heavy ions)**:
  The experimental long-term task of JINR's megascience project NICA is investigation of hot and dense strongly interacting QCD-matter, search for a mixed phase and critical point in the QCD phase diagram *with the main goal to shed light on the poorly explored region of this diagram and clarify the basis of QCD in the nonperturbative regime and other theoretical approaches for the description of strongly interacting matter*.

JINR priorities in 2017–2023:

- in **Modern nuclear physics** (due to interconnection with QCD and particle physics):

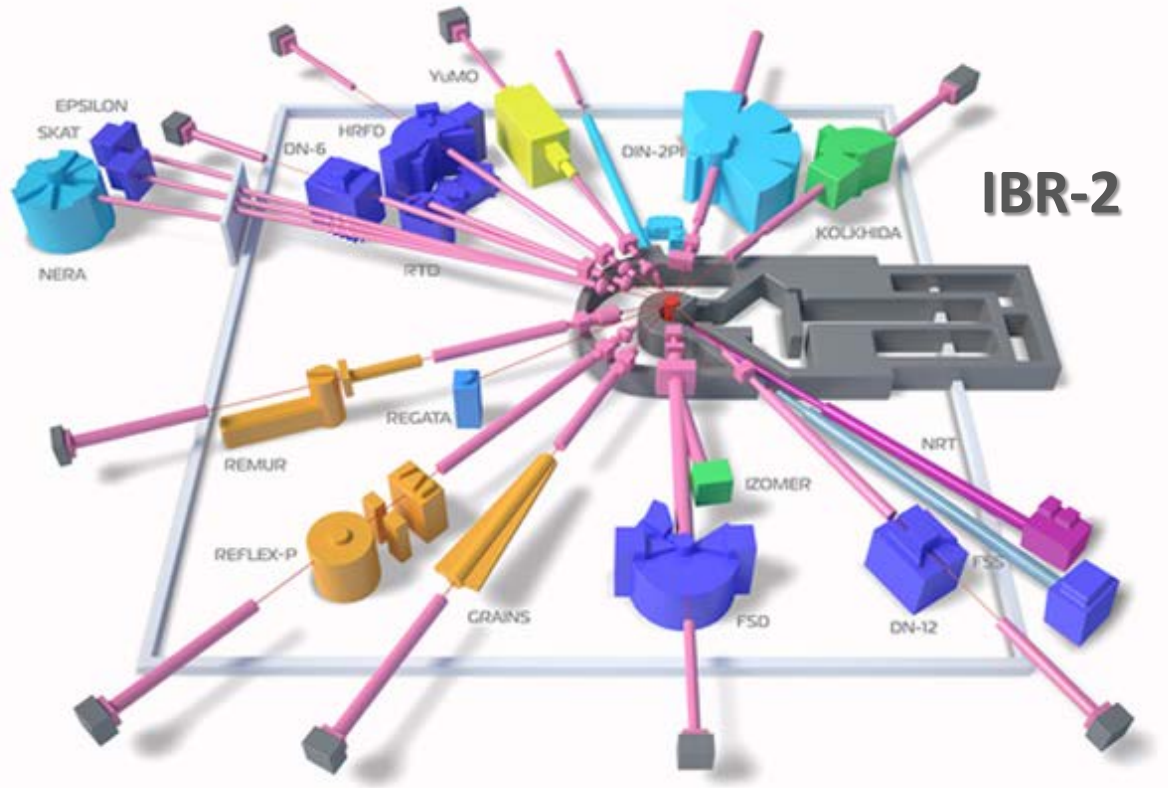
  the main goal is to enhance JINR's leadership in the physics of superheavy elements through a qualitatively new-level research at the JINR Factory of SHE on the synthesis and study of nuclear, physical and chemical properties of SHE isotopes, on the study of reaction mechanisms with stable and radioactive nuclei, on the search for new types of atomic nuclei decay, etc.





ACCULINNA-2 fragment-separator

JINR priorities in 2017–2023:



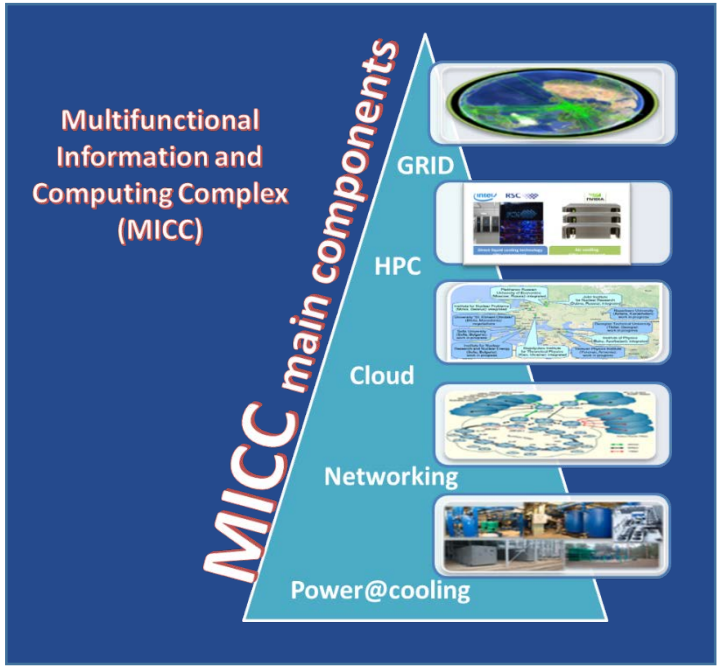
- in **Condensed matter physics**:

  the main goal is the development of experimental facilities in order to utilize efficiently the possibilities of the IBR-2 pulsed reactor – one of the three most intense neutron sources in the world.

  Studying the physics and chemistry of complex fluids and polymers, functional materials, novel physics of nanosystems brings new technological applications in power engineering, electronics, biology, medicine, etc.

  The lifetime of the IBR-2 reactor by its design is scheduled up to mid-2030s, therefore within this Seven-year plan a concept for a new world-class neutron scattering facility has to be developed.

JINR priorities in 2017–2023:



- in **Information Technology,**

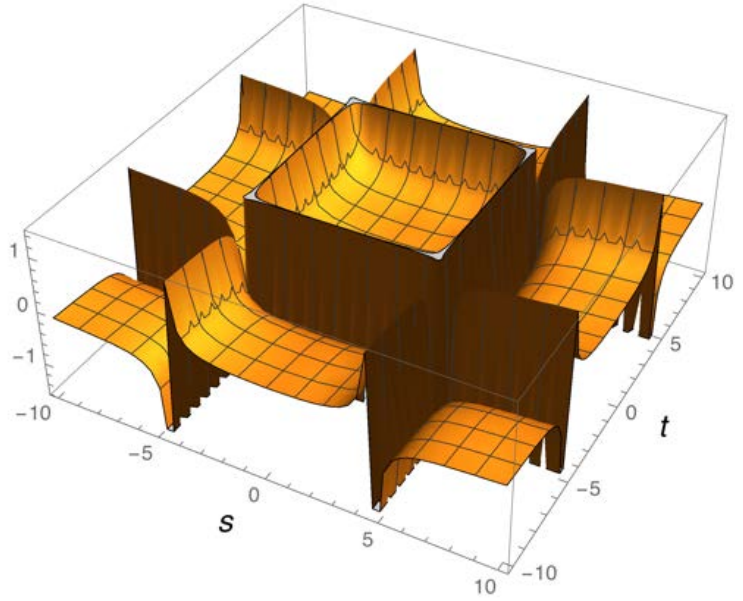
the main goal is to carry out fundamental promising and advanced research in the field of distributed computing, computational mathematics and computational physics aimed at the creation and use of new computing platforms, the development of new mathematical methods, algorithms and software by addressing urgent problems arising in experimental and theoretical studies.

JINR priorities in 2017–2023:

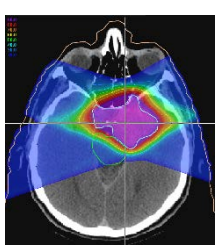
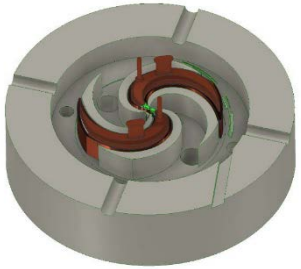
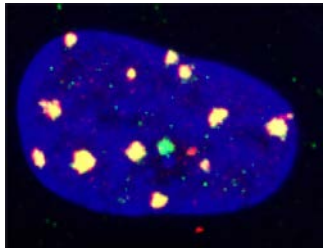
- in **Theoretical Physics,**

  interdisciplinary studies directly integrated into international projects with the participation of scientists from major research centres in the world and closely coordinated with the JINR experimental programmes.

  - Quantum field theory and particle physics
  - Nuclear theory
  - Theory of condensed matter
  - Modern mathematical physics
  - Research and education project DIAS-TH



JINR priorities in 2017–2023:

❑ in **Life Sciences:**

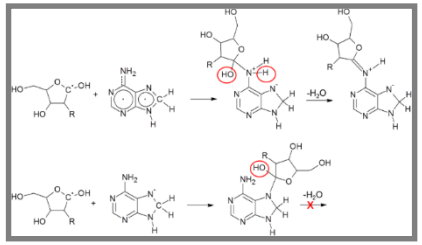
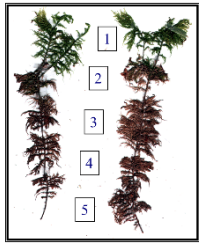
Radiobiological research are focused on studying heavy-ion action mechanisms at the molecular, cellular, tissue, and organism levels of biological organization.

Astrobiological research are focused on the problem that is central for understanding the production of the prebiotic compounds underlying the formation of the living systems: what is primary in the origin of life, genetics or metabolism?

Radiation medicine: Creation and start-up of an infrastructure for carrying out radiation therapy and other applied research.

Applied and methodological research include studies using neutron activation analysis at the REGATA facility of the IBR-2 reactor and atomic absorption spectrometer (AAS) within the framework of international and national projects in the field of life sciences.

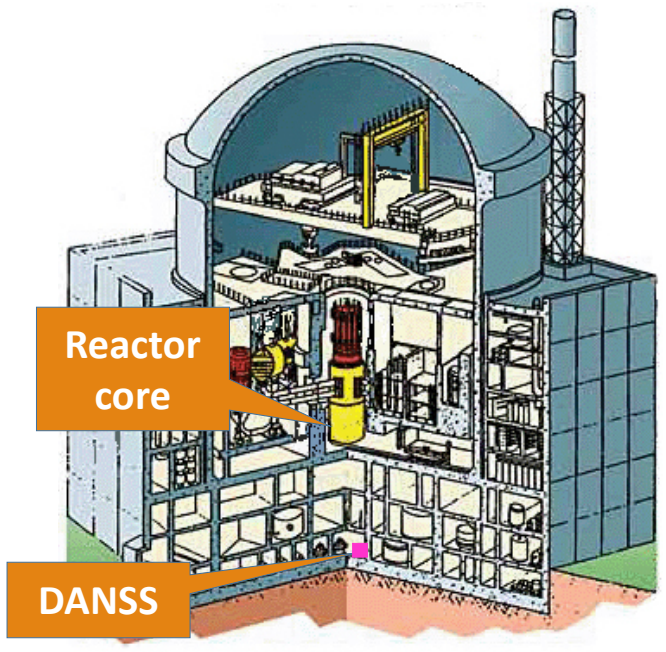
Raman spectroscopy and microscopy: Spectral and microscopic studies of membrane proteins, cells and organisms.

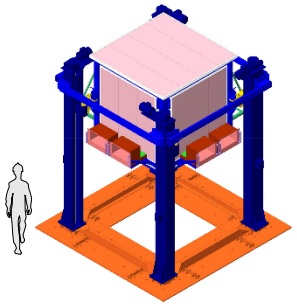
Neutrino programme

DANSS

Reactor monitoring and search for short-range neutrino oscillations



- Segmented "XY" plastic scintillator (1 m^3 =1.1 tn) close to the core of the Kalinin NPP reactor #4.
- 3D-information about each event.
- Status: data taking.

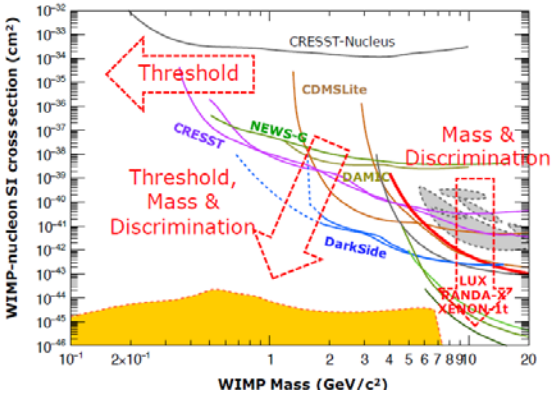


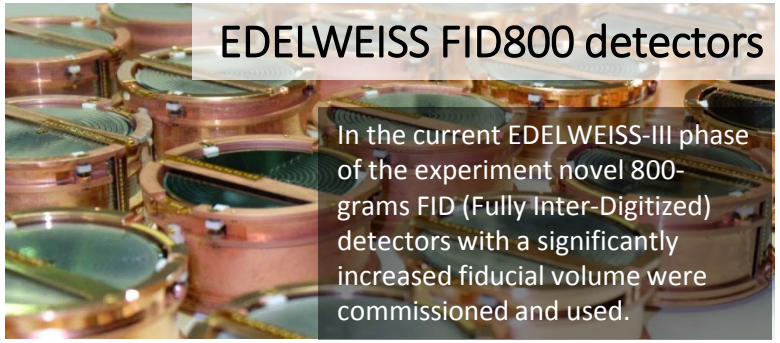
Edelweiss

Direct detection of Dark Matter, germanium target, LSM laboratory

EDELWEISS-III: phase with 20 kg Ge array, detector-bolometers with Fully InterDigitized electrode design for active suppression of surface background.

New 2018 results: Previous WIMP results supplemented by Axion Like Particles (ALP) limits



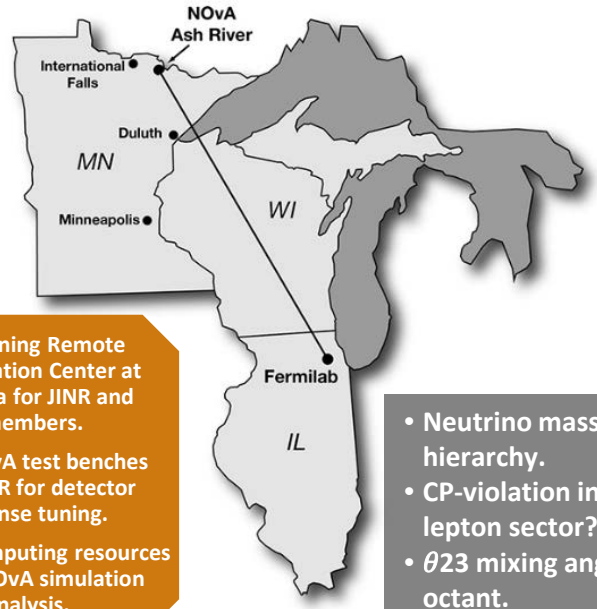


The experimental program is moving to **EDELWEISS-LT** phase, aims: Light WIMPs, ALP particles in the energy region inaccessible by Ar/Xe.

First 2018 result during R&D: Sub-GeV WIMP limit @surface

NOvA

Physics goals with $\nu_\mu \rightarrow \nu_e/\nu_\mu$ neutrino oscillation



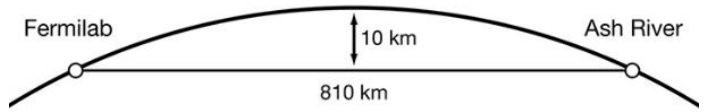
JINR's tasks in NOvA:

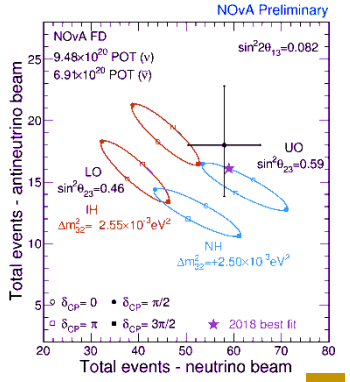
– Running Remote Operation Center at Dubna for JINR and INR members.

– NOvA test benches at JINR for detector response tuning.

– Computing resources for NOvA simulation and analysis.

- Neutrino mass hierarchy.
- CP-violation in the lepton sector?
- $\theta 23$ mixing angle octant.





- Neutrino beam exposure 8.85x10^{20} POT.
- Antineutrino beam exposure 6.91x10^{20} POT.
- NOvA observes 58 events (expecting 15 bkg) in neutrino and 18 events (5.3 bkg) in antineutrino modes in the electron appearance analysis.

NICA grants by the Russian Foundation for Basic Research

The Russian Foundation for Basic Research has announced a competition for the best projects on the theme:

"Fundamental properties and phase transformations of hadronic and quark-gluon matter: a mega-science facility "NICA Complex"

РОССИЙСКИЙ ФОНД ФУНДАМЕНТАЛЬНЫХ ИССЛЕДОВАНИЙ
РФФИ

Details of the competition: at the RFBR website http://www.rfbr.ru/rffi/ru/contest
Application submission: 3 September – 15 October 2018
Applicants: research teams from 2 to 10 participants
Duration of a project: 3 years
Maximum funding: 6 million rubles a year; minimum funding: 3 million rubles a year

JINR UC outreach activity

- Scientific Schools for physics teachers at CERN and JINR (started in 2009); http://teachers.jinr.ru/
- Visits to the JINR laboratories for school and university students;
- Festivals of sciences, etc.