

**INTERNATIONAL INTERGOVERNMENTAL ORGANIZATION
МЕЖДУНАРОДНАЯ МЕЖПРАВИТЕЛЬСТВЕННАЯ ОРГАНИЗАЦИЯ
JOINT INSTITUTE FOR NUCLEAR RESEARCH
ОБЪЕДИНЕННЫЙ ИНСТИТУТ ЯДЕРНЫХ ИССЛЕДОВАНИЙ**



Armenia



Azerbaijan



Belarus



Bulgaria



Cuba



Czech Rep.



Georgia



Kazakhstan



D.P.R. Korea



Moldova



Mongolia



Poland



Romania



Russia



Slovakia



Ukraine



Uzbekistan



Vietnam



Egypt



Germany



Hungary



Italy



Serbia



South Africa

www.jinr.ru

THE JOINT INSTITUTE FOR NUCLEAR RESEARCH

Short introduction

Dr. D. Kamanin,

Head of the Department of International Cooperation

60 years: Mission of JINR

Science
Bringing
Nations
Together



5 Major Pillars:

□ Research

Basic studies at the frontiers of knowledge

□ International cooperation

Combining world intellect and material resources

□ Innovation

Multi-disciplinary studies

New instruments and technologies

□ Education

Training students, young scientists and engineers

□ Outreach

Promoting science in society worldwide

Basic
Research

International cooperation

Innovations

Education

Outreach

Establishment of the Joint Institute for Nuclear Research

The Joint Institute for Nuclear Research (JINR) is an international intergovernmental scientific research organization established through the Convention signed on 26 March 1956 in Moscow to unite scientific and material potential of its member states in order to study fundamental properties of matter



Albania



Bulgaria



China



Czechoslovakia



GDR



Hungary



D.P.R.Korea



Mongolia



Poland



Romania



USSR

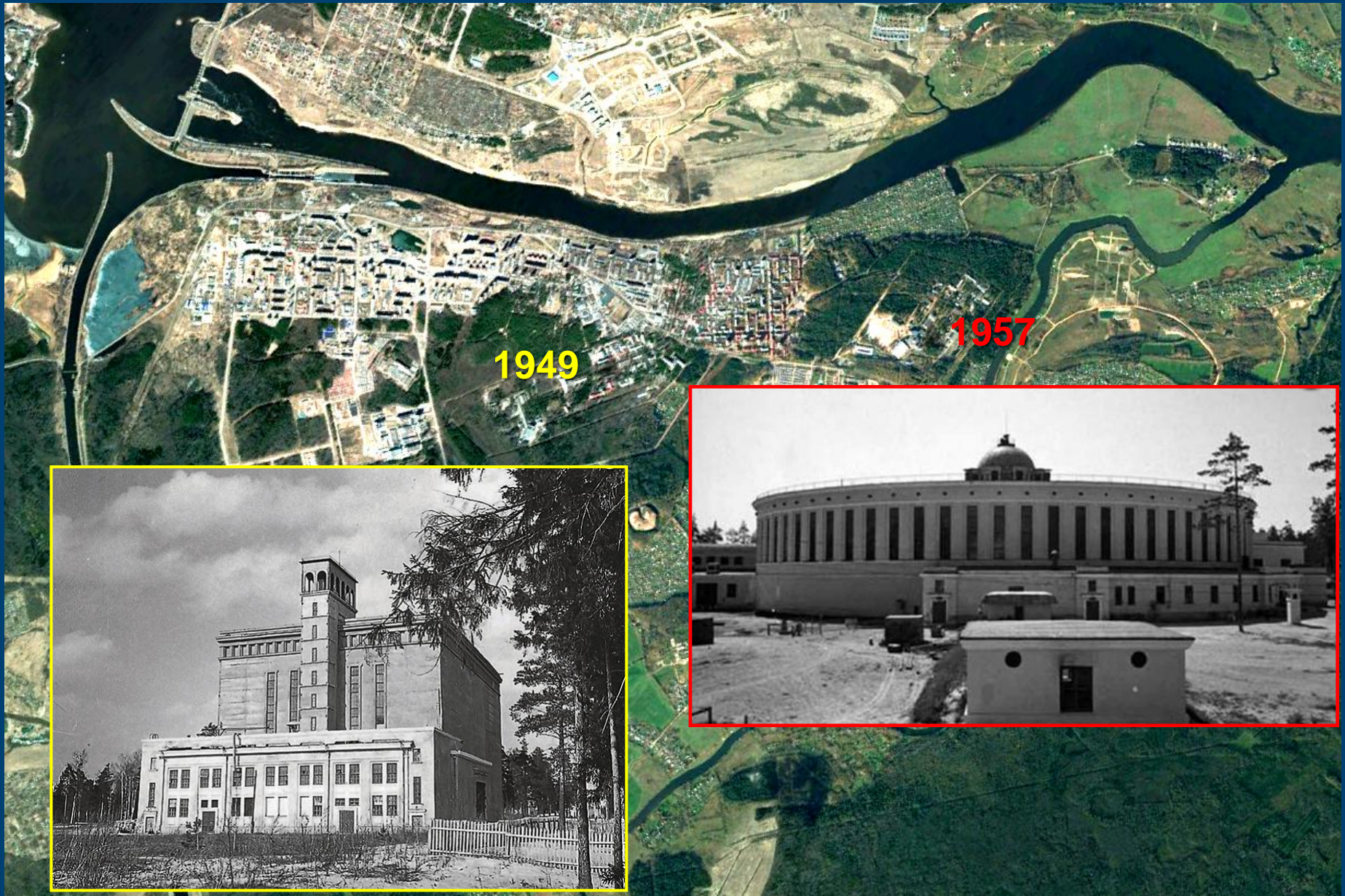


Vietnam

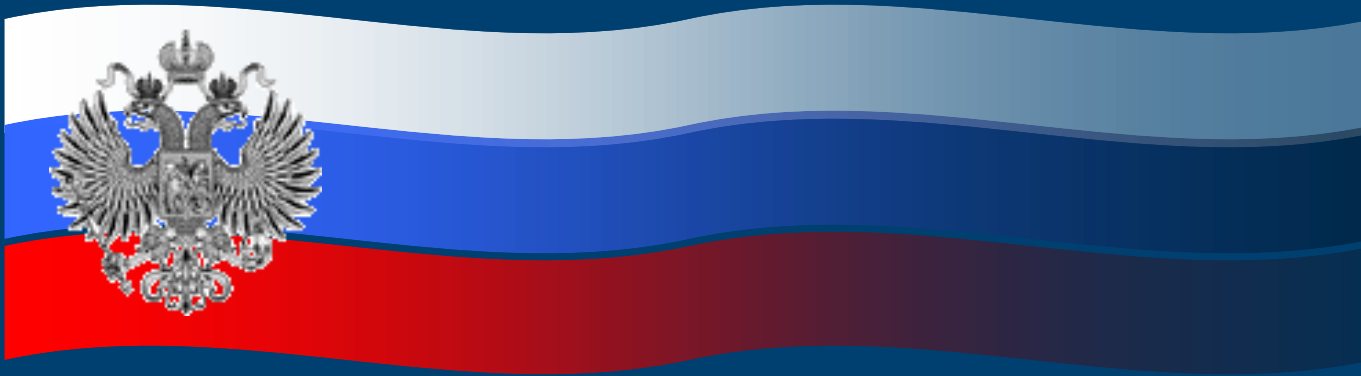


The results of research carried out at the Institute can be used solely for peaceful purposes for the benefit of mankind.

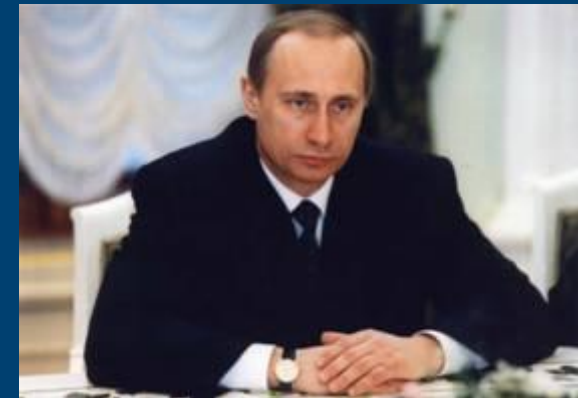
Dubna – Island of Stability



JINR – Russia Agreement



A very important for JINR Russian Federal law was signed by President V.Putin in 2000. This is ***“The Agreement between the Government of the Russian Federation and JINR on the Location and Terms of Activity of JINR in the Russian Federation”***. This Agreement grants privileges and immunities in accordance with established practice for international intergovernmental organizations.



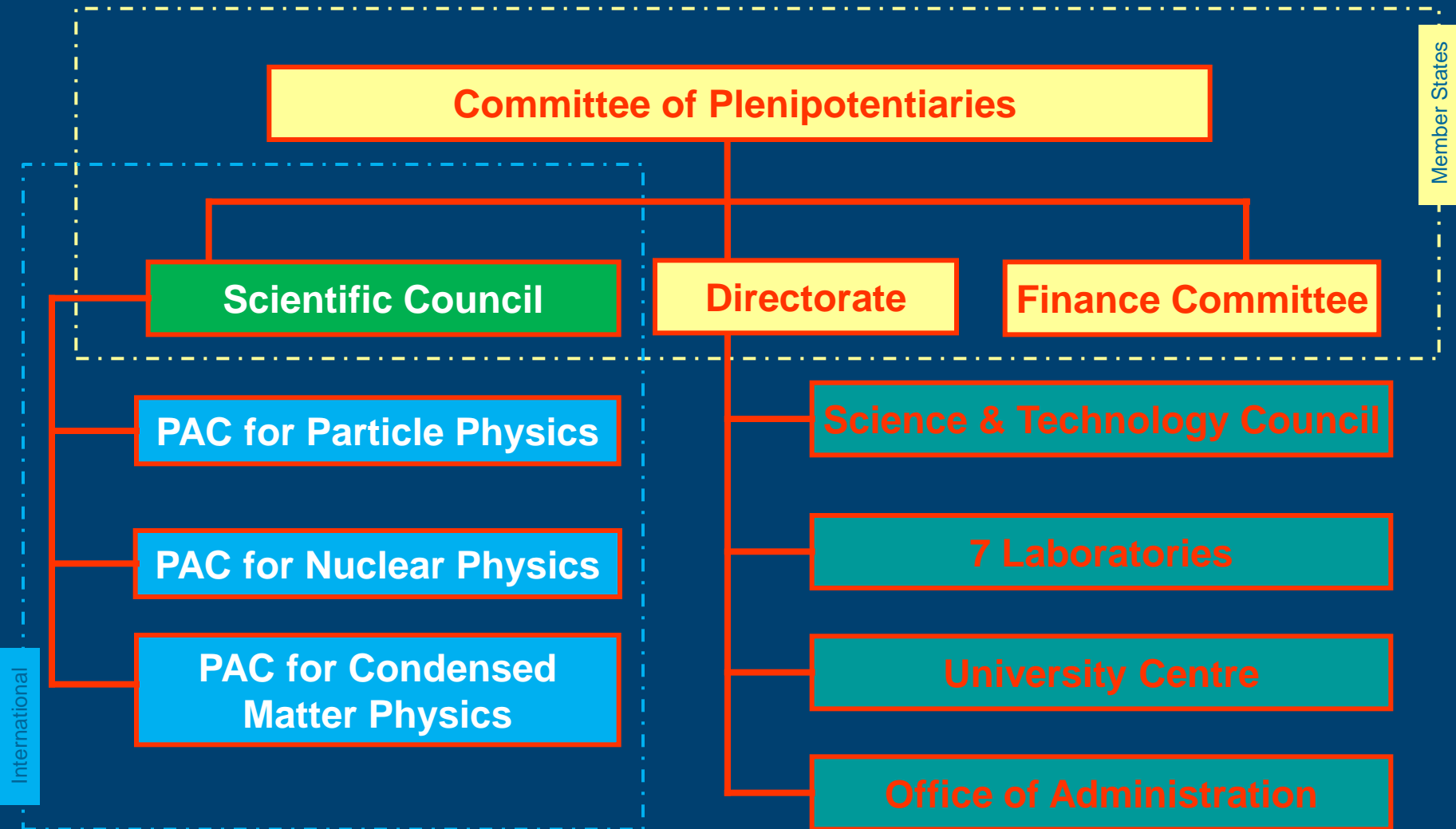
JINR has at present 18 Member States



Armenia
Azerbaijan
Belarus
Bulgaria
Cuba
Czech Republic
Georgia
Kazakhstan
D. P. Republic of Korea
Moldova
Mongolia
Poland
Romania
Russian Federation
Slovakia
Ukraine
Uzbekistan
Vietnam

Participation of **Egypt**, **Germany**, **Hungary**, **Italy**, **Republic of South Africa**, **Serbia** in JINR activities is based on bilateral agreements signed on the governmental level.

JINR Governing bodies and structure



JINR comprises 7 Laboratories, each being comparable with a large institute in the scale and scope of investigations performed



**Dzhelepov
Laboratory of Nuclear Problems**



**Veksler and Baldin
Laboratory of High Energy Physics**



**Bogoliubov
Laboratory of Theoretical Physics**



**Flerov
Laboratory of Nuclear Reactions**



Frank Laboratory of Neutron Physics



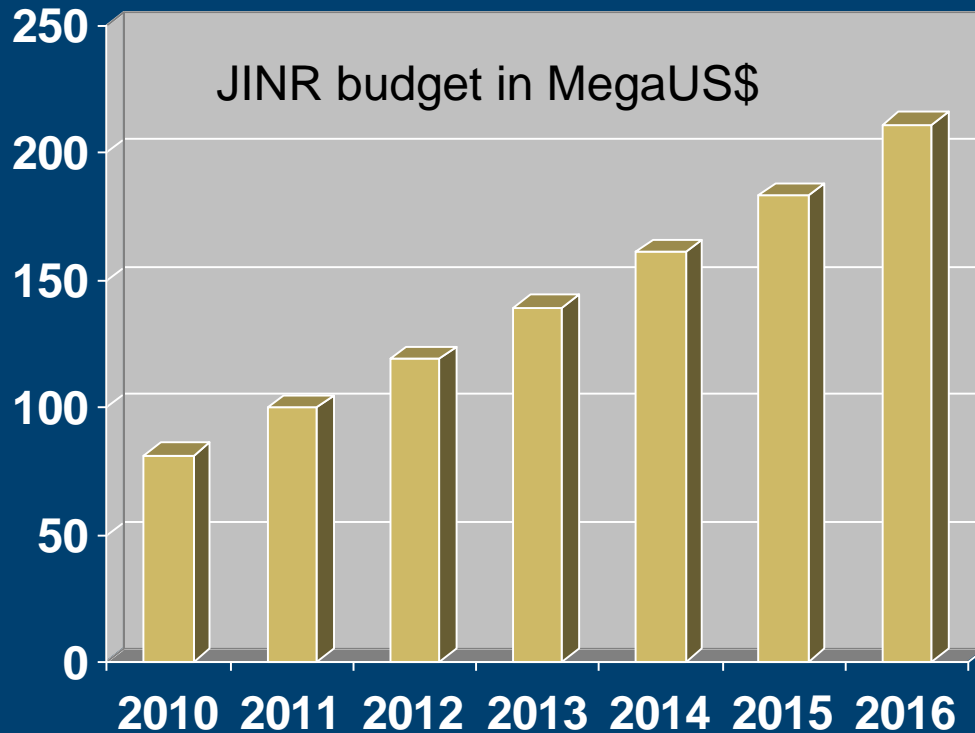
Laboratory of Radiation Biology




**Laboratory of
Information Technologies**

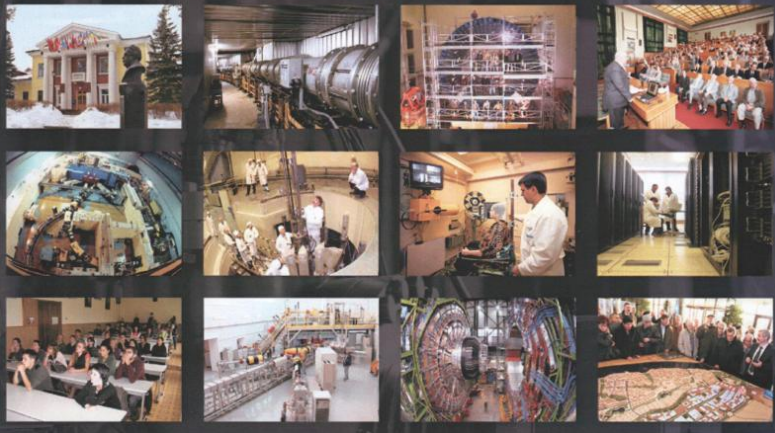
JINR in some figures

- JINR's staff members ~ 4500
- researchers ~ 1200
including from the Member States
(but Russia) ~ 400
- Doctors and PhD ~ 1000



 **Successfully executed**

**JOINT INSTITUTE FOR
NUCLEAR RESEARCH**



**SEVEN-YEAR PLAN
FOR THE DEVELOPMENT OF JINR
2010–2016**

(Approved by the Committee of Plenipotentiaries of the Governments
of the JINR Member States at its session held on 19–21 November 2009)

Dubna 2009

Cooperation with CERN

CERN is JINR's main partner in Particle Physics over more than 50 years.
Dubna physicists are widely involved in more than
20 CERN projects, including 3 LHC experiments & LHC itself



1963, JINR, Dubna
CERN Director-General
Prof. V.Weisskopf,
Prof. V.Dzhelepov and
Prof. B.Pontecorvo



2004, JINR Dubna
CERN Director-General Dr R.Aymar
meeting with
JINR director acad. V. Kadyshvsky



1971, Dubna
CERN Director-General Prof. W.Jentschke
and JINR Director Prof. N.Bogoliubov

2010: CERN – JINR mutual participation in their projects

2014: CERN – JINR reciprocal Observer status



Web of Science®

JINR publication statistics

| 2011 - 2015 | 2015 |
|--|---|
| Total number of publications: 5116 Total number of citations: 70 059 Excluding self-citations: 60 019 Average citations per article: 13.69 h-index: 91 | Total number of publications: 1176 Total number of citations: 5258 Excluding self-citations: 5054 Average citations per article: 4.47 h-index: 29 |

2016: JINR in comparison with CERN

| JINR | CERN |
|--|---|
| Total number of publications: 1147 Total number of citations: 1164 Excluding self-citations: 948 Average citations per article: 1.01 h-index: 14 | Total number of publications: 1186 Total number of citations: 2241 Excluding self-citations: 1829 Average citations per article: 1.89 h-index: 17 |

FLNR accelerator complex





May 2012:

Official approval of the name *Flerovium* for element 114
and the name *Livermorium* for element 116

30th December 2015:

Approval of the discovery of new elements 113, 115, 117, and 118

- element 113: RIKEN (Japan)
- elements 115 and 117: JINR (Dubna) - LLNL (USA) – ORNL (USA) collaboration
- element 118: JINR (Dubna) – LLNL collaboration.

28th November 2016:

IUPAC formally approved names and symbols of new elements:

Nihonium (Nh) for element 113,
Moscovium (Mc) for element 115,
Tennesine (Ts) for element 117, and
Oganesson (Og) for element 118.

Флеровий 114

Fl

Flerovium

Московский 115

Mc

Moscovium

Ливерморий 116

Lv

Livermorium

Теннессин 117

Ts

Tennesine

Оганесон 118

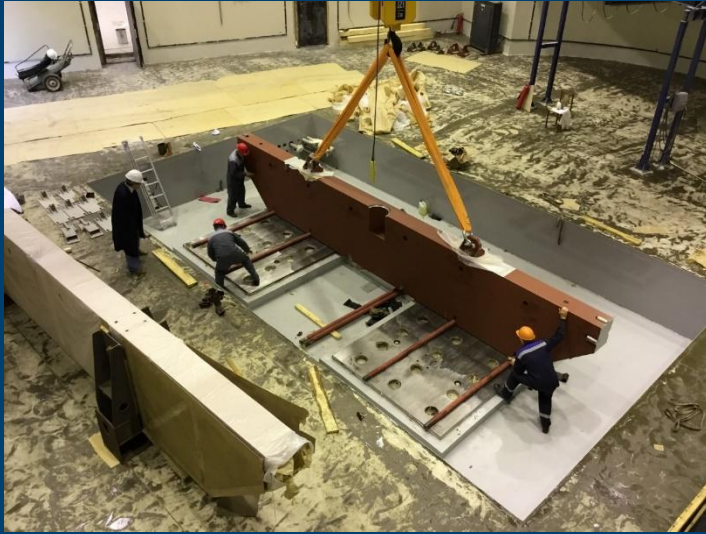
Og

Oganesson

All these elements were synthesized for the first time at the U-400 accelerator complex of the Flerov Laboratory of Nuclear Reactions of JINR.

DC-280 cyclotron: main magnet assembling

15 September 2016: started



18 October 2016



18 January 2017



Magnet of DC280 cyclotron is assembled and ready for testing!

SHE Factory. Time-schedule.



- Completion of the **SHE Factory building** and its **engineering systems** (*2016 – June 2017*)
- Assembling the **DC-280 cyclotron**. Installation of new **Gas-Filled Recoil Separator**. (*September 2016 – December 2017*)
- **First experiments** (*2018*)

Technology transfer to Member States



CYCLOTRON CENTRE IN ASTANA (KZ)
LAUNCHED IN 2006

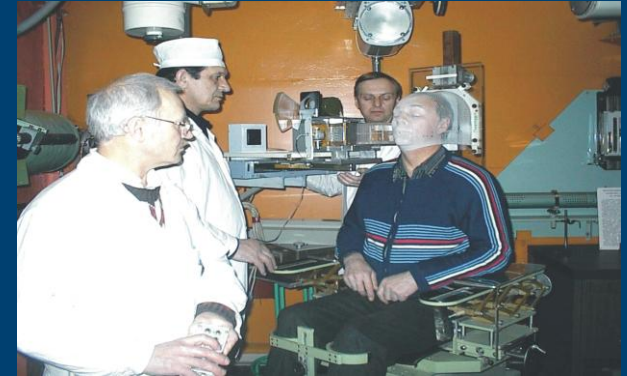


DC-60
CYCLOTRON

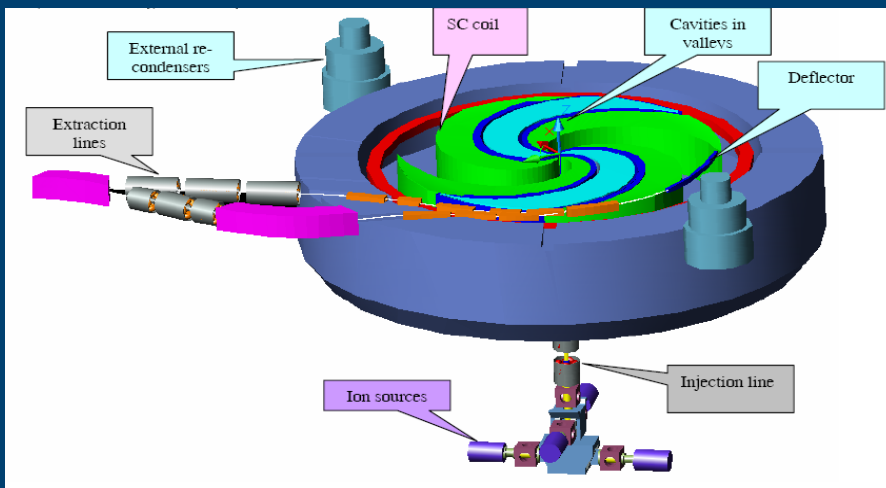
Applied Research: proton therapy and medical accelerators development

Proton Therapy at DLNP Phasotron

- Unique in Russia experience of application of conformal 3D therapy method
- About 100 patients per year since 2000
- Development of the project of PT Center



C400 SC Cyclotron Project for p & C Therapy together with IBA company & ASIPP (Hefei, China)



IBR-2: Pulsed reactor with fast neutrons

mean power **2 MW**

pulse frequency **5 Hz**

pulse width for fast neutrons **200 μ s**

thermal neutrons flux density on the moderator surface: **10^{13} n/cm²/s**

maximum in pulse: **10^{16} n/cm²/s**

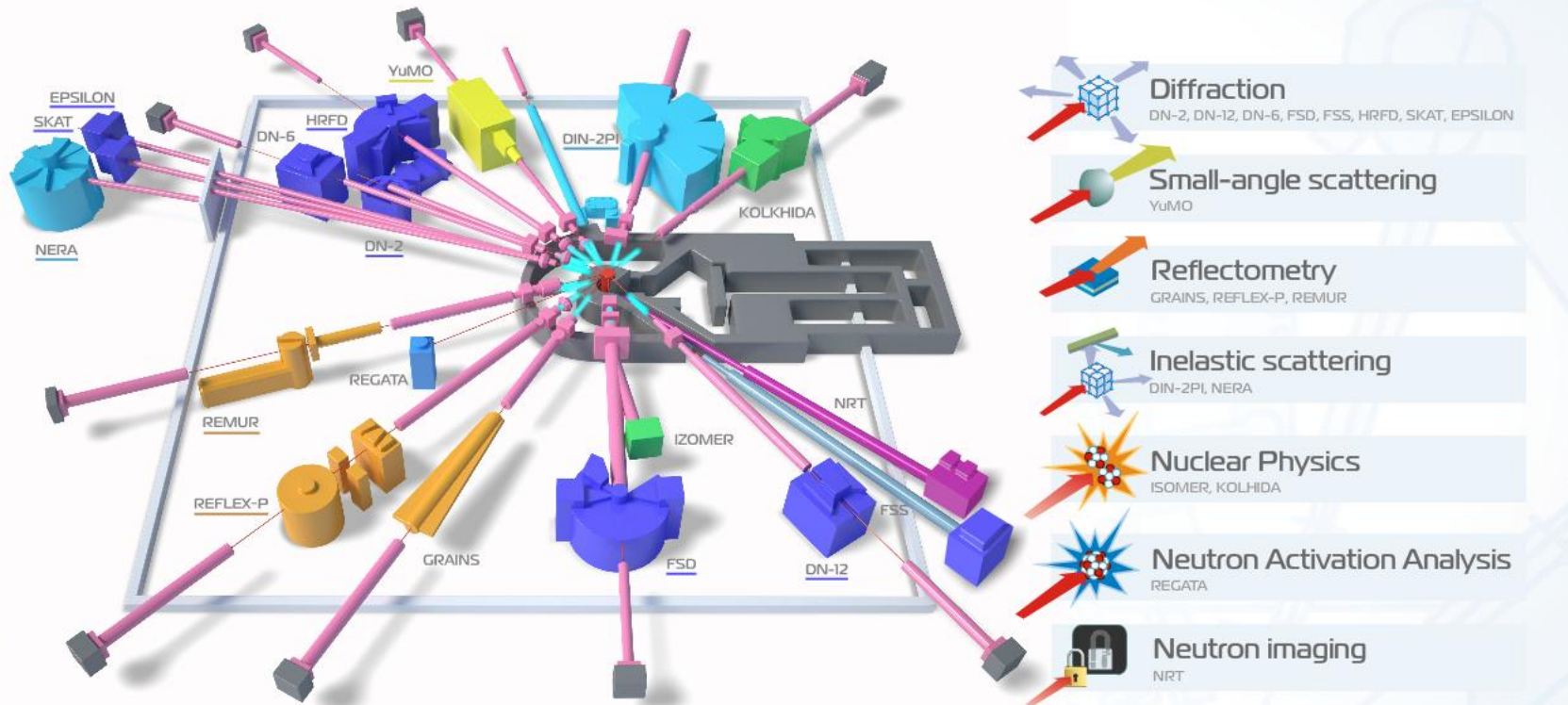


IBR-2 is included in the 20-year European strategic research program in the field of neutron scattering



Facilities at IBR-2 reactor

15 instruments are in operation at the Spectrometer Complex of the IBR-2M Reactor



The user policy of the IBR-2 is world friendly.
197 proposals from 19 countries were selected in 2015.

Assembling of the First Cluster of the GVD at the Baikal lake, Start at March 2015

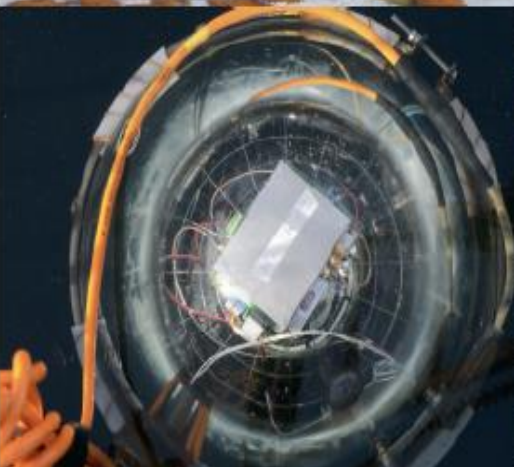


Бруно Понтекорво

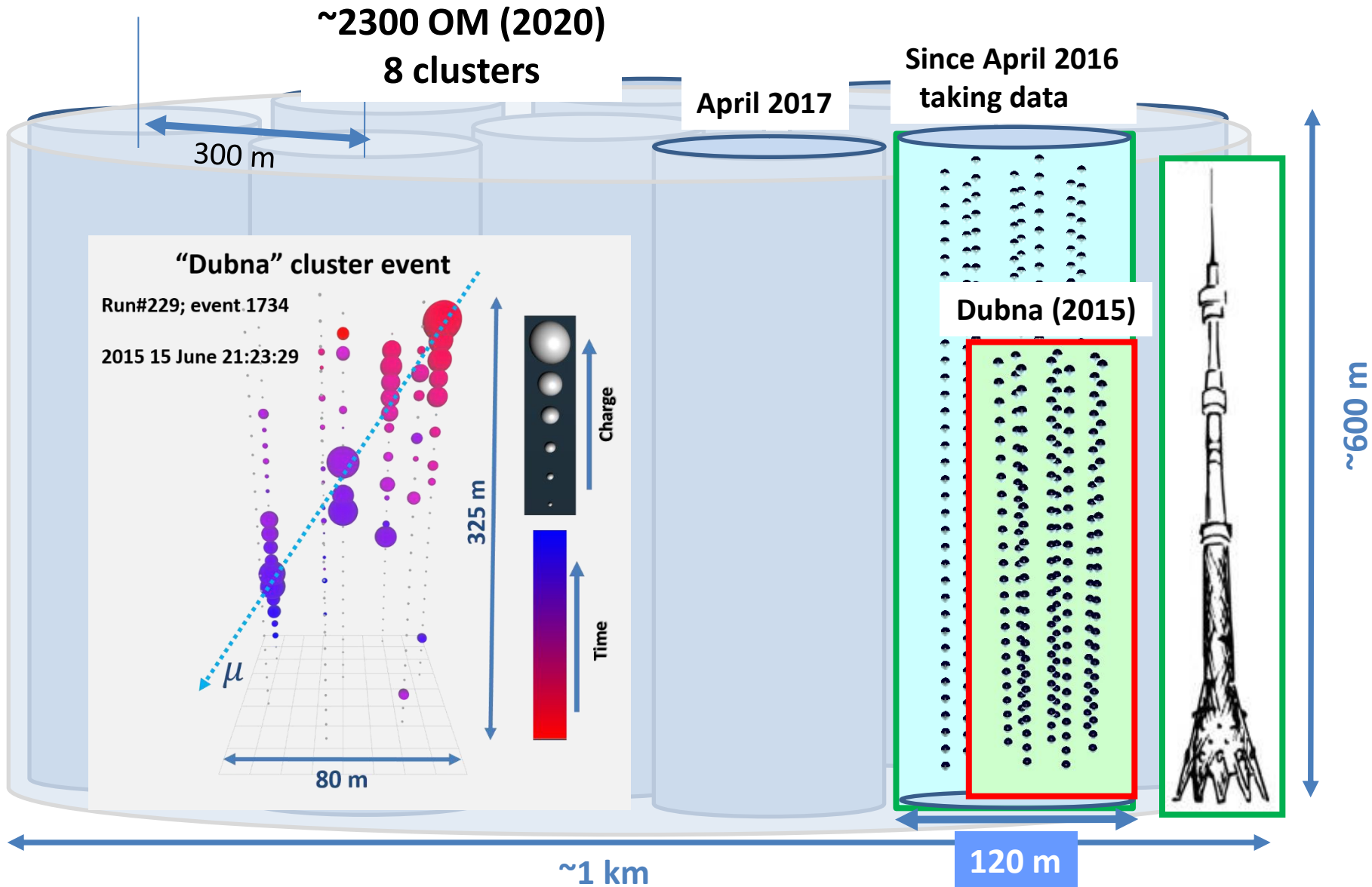
JINR
Dzheleпов
Laboratory
for Nuclear
Problems
INR of RAS
Institute for
Nuclear
Research of
the Russian
Academy of
Sciences



M.A. Markov



Present and future of the BAIKAL-GVD



NICA Layout



**25 March 2016. NICA “corner stone”
ceremony at LHEP JINR**

Infrastructure (SC magnets)

~ 450 SC magnets will be assembled & tested in the workshop for NICA & SIS-100 FAIR



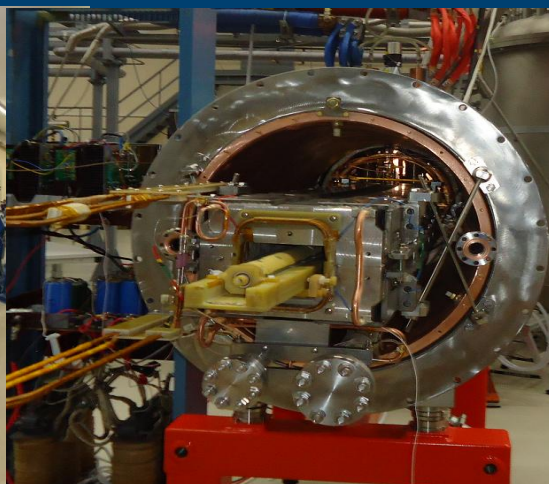
workshop ifor coil production



The technological line for SC magnet assembly and tests



SC cable production workshop



Tests of the pre-serial dipole magnet: magnetic field measurements

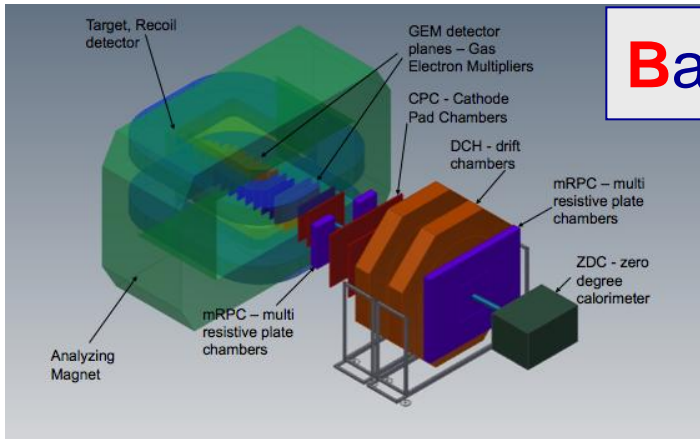
3 detectors

Baryonic Matter at Nuclotron (BM@N)

the fixed target experiment at the Nuclotron

Stage I

2017

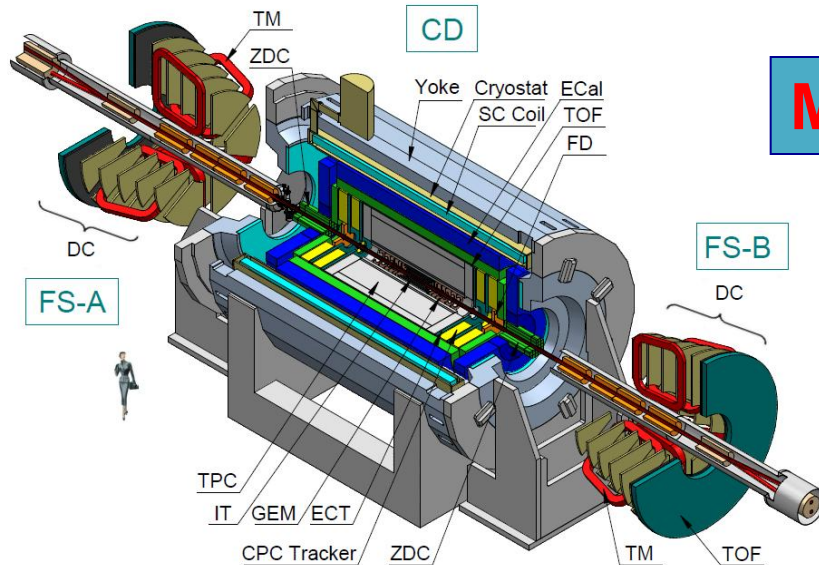


MultiPurpose Detector (MPD)

at the Collider

Stage I

2019



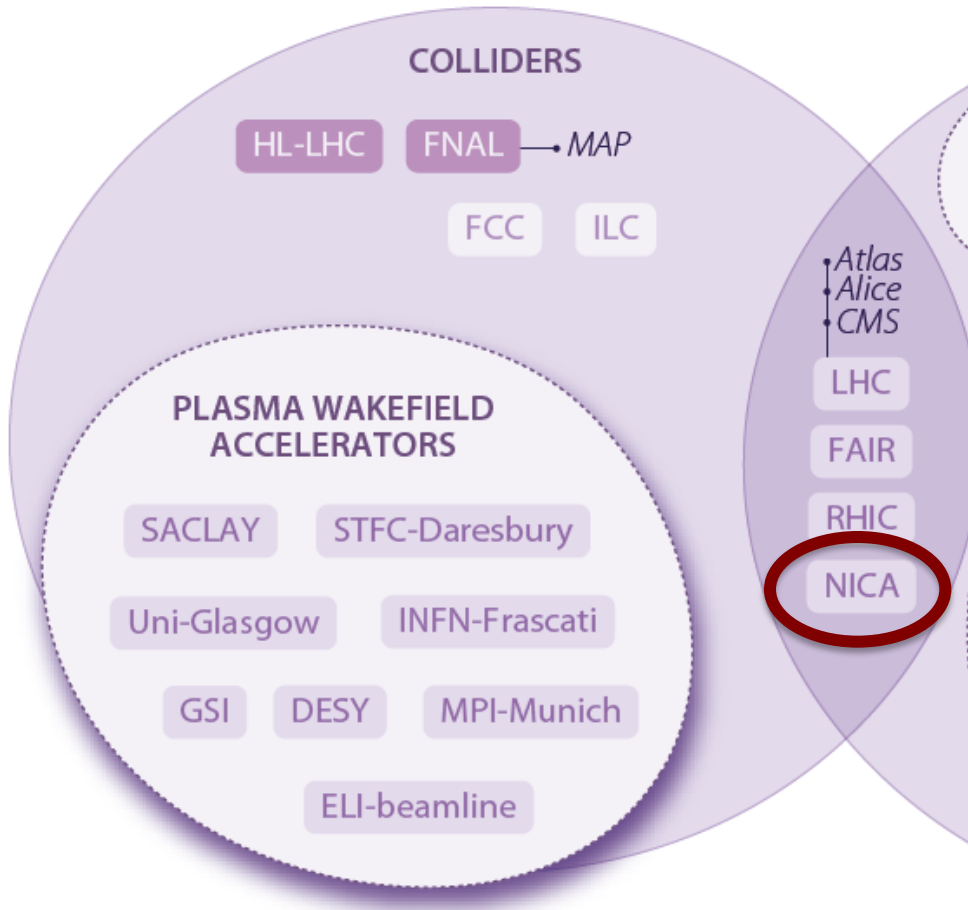
SPD (Spin Physics Detector) at the Collider

the project - in preparation

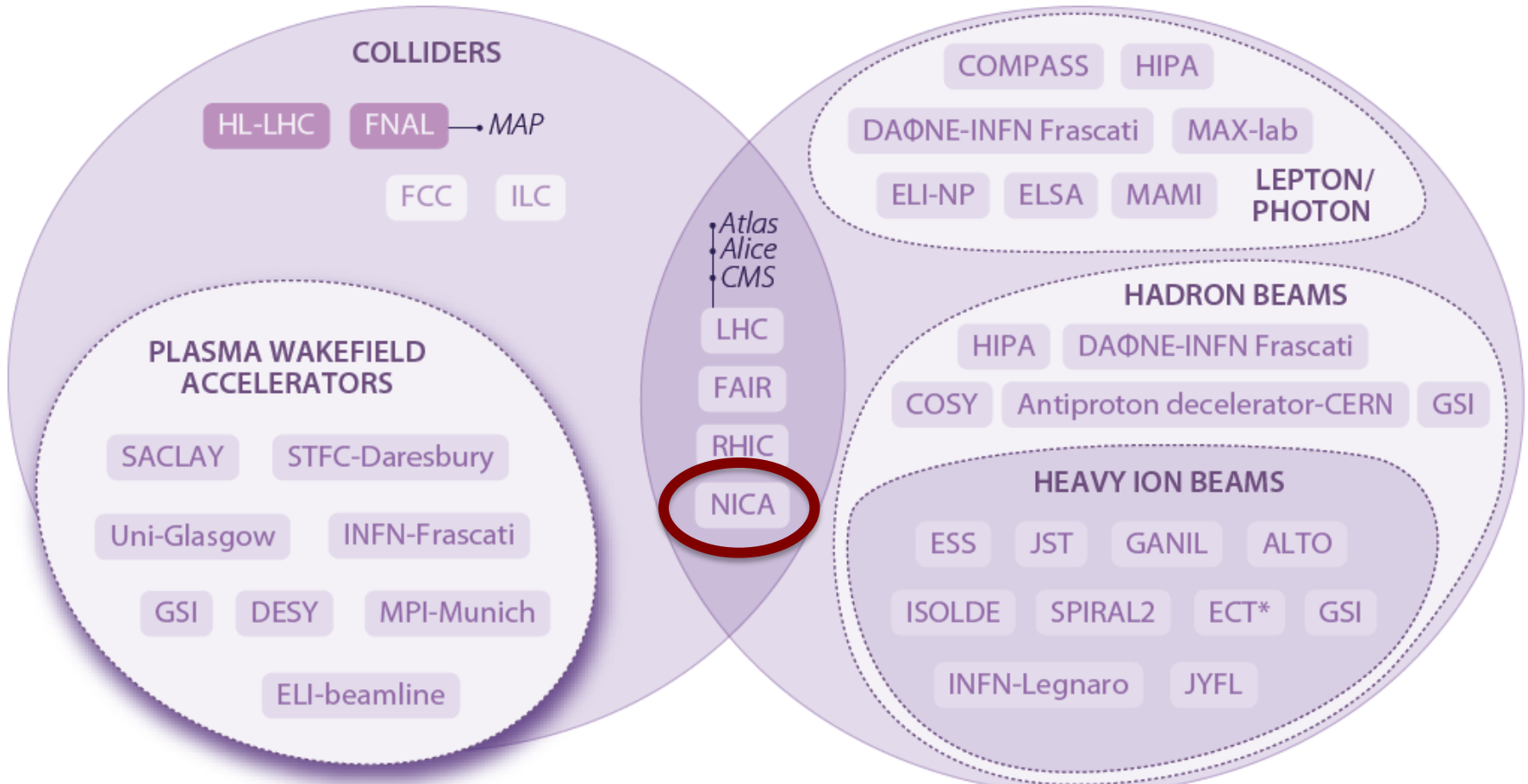
New issue of the ESFRI Roadmap

Main Research Infrastructure in Particle and Nuclear Physics

PARTICLE PHYSICS



NUCLEAR PHYSICS



NICA – Complementary Project

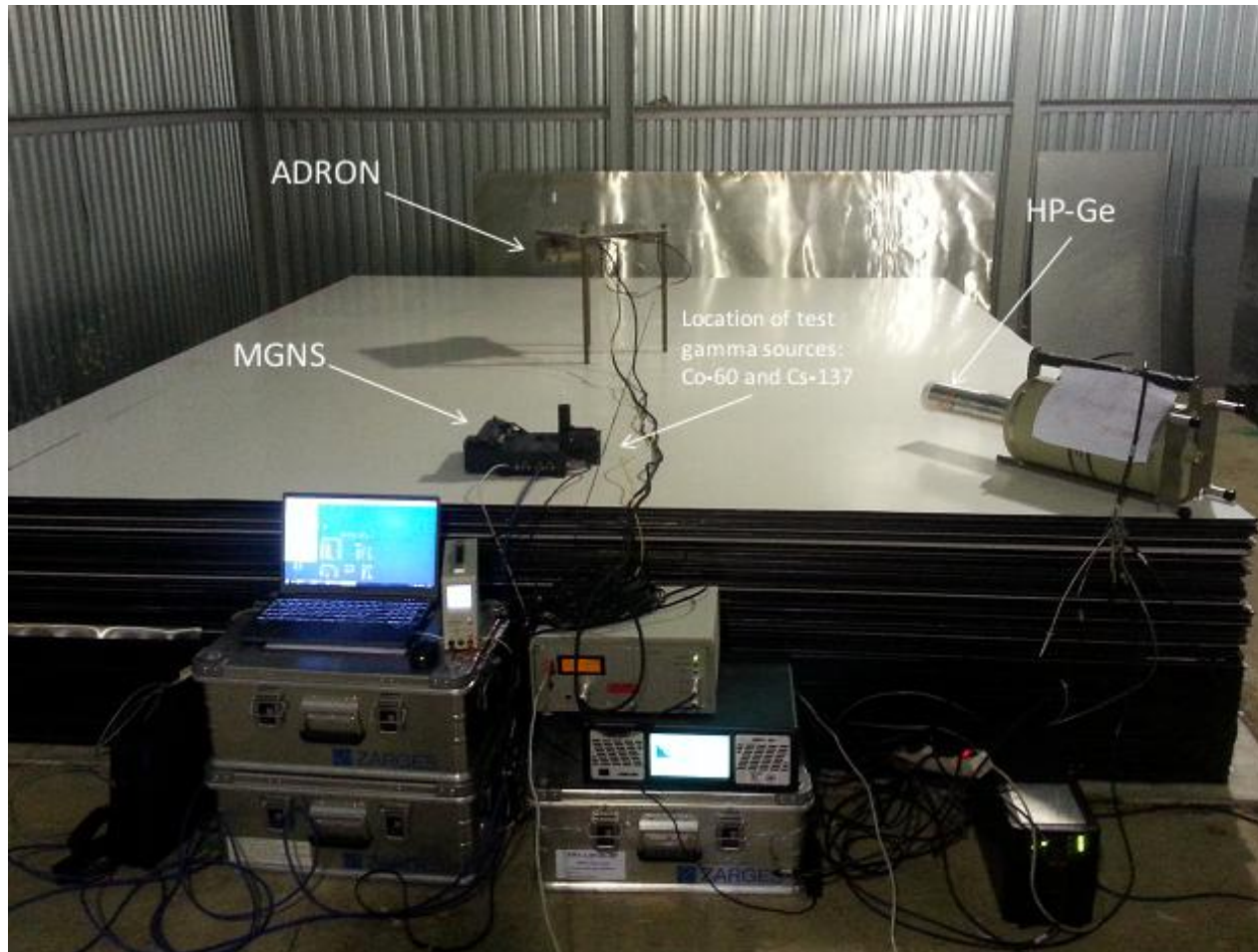
NICA construction site



27/05/2017



Nuclear planetary science



In collaboration between the Space Research Institute (RAS) and FLNP (JINR), a *special facility has been constructed at the LRB that can model planetary soil and allows testing prototypes of active neutron and gamma spectrometers.*

The facility can use a neutron generator for soil model exposure. Inside the facility, a silicate glass-based soil model has been assembled.



SAINT PETERSBURG
STATE UNIVERSITY



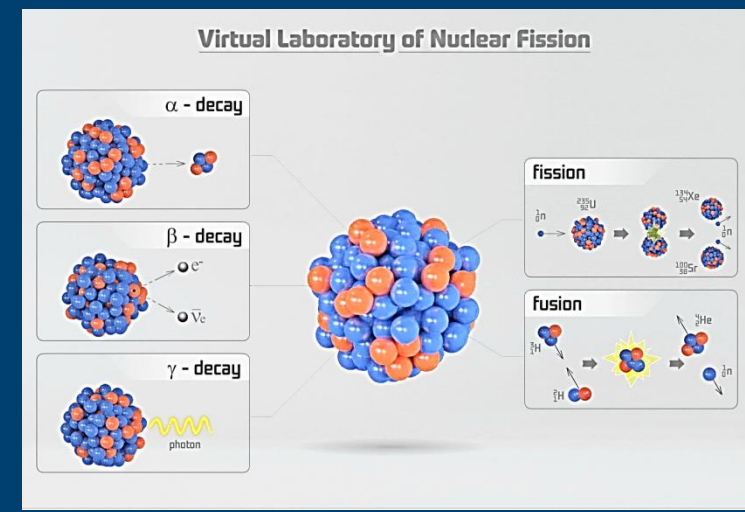
Казанский
федеральный
УНИВЕРСИТЕТ



- Attachment of students (955 students and PhDs since 2013)
- International Student Practice (1267 participants since 2004)
- Summer Student Programs (80 participants since 2014)
- Engineering and Physics Training

JINR UC Educational Programmes Outreach activities

- International Scientific Schools for physics teachers at JINR and CERN (**647 participants from 8 countries since 2009**)
- Festivals of Science (**Since 2014**)
- Interschool Physics and Mathematics Open Classroom
- Popular lectures, videoconferences and visits to JINR
- Department of Development of Modern Education Programmes



Bringing people together

The Institute annually organizes up to 10 large conferences and more than 30 international workshops, as well as schools for young scientists, practice courses and schools for teachers – in total more than 70 international events per year, including 10 regular sessions of the JINR governing bodies.



Geography of JINR meetings in 2016



Science
Bringing
Nations
Together

Newcomers in nuclear research: High level visits to JINR

20 January 2017

Delegation from Bolivia
headed by Vice-Minister for energy and alternative sources of energy Mr. Joaquín Rodríguez and



- The Bolivian side affirmed its interest in cooperation with JINR on personnel training to develop nuclear physics and nuclear energy.
- The practical scenarios for professional training of Bolivian specialists in Dubna were considered.

Delegation of JSC "Rosatom Overseas Ink" (ROSATOM)
Headed by the President Mr. Evgeny Pakermanov



07 February 2017
Ambassador of Bolivia
Mr. Alex Diaz Mamani

17 February 2017

Delegation from Republic of Zambia
headed by Secretary to Cabinet of the Office of the President Dr. Roland Msiska accompanied by representatives Of SC "Rosatom"

- The Zambian part expressed interest in continuing contacts with JINR, and especially emphasized the interest in activities of the Sector of Neutron Activation Analysis.





The 1st Meeting of BRICS Working Group on Research Infrastructure and Mega-Science projects 15-16 May 2017, JINR, Dubna

Agenda:


1. National BRICS countries policy on global research infrastructure and development of the BRICS Global Research Advanced Infrastructure Network (GRAIN);
2. Terms of Reference (ToR) of the WG;
3. Presentations of the national infrastructures;
4. Accessibility of BRICS research infrastructure;
5. Round table discussion (tasks for future and opinions of observers);

The main goals of the WG on Research Infrastructure (according to ToR):

- to contribute to implementation of the BRICS Research and Innovation Initiative;
- to promote cooperation within large-scale research infrastructure;
- to support initiatives leading to efficient use, development and management of mega-science projects in the BRICS countries;
- to create dynamically developing complex of Research Infrastructures amongst BRICS countries;
- to stimulate the interaction and transferring of scientific knowledge to the productive sector, aiming at increasing of productivity and competitiveness;
- to promote innovative environments associated to the Mega Science Projects, aiming at the creation of high technology-based companies;
- to engage Global research community in the BRICS Research Infrastructures.



Total duration of sessions: 8.5 hours
Technical tour to 3 major
research infrastructures of JINR



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Welcome to Dubna!
Welcome to www.jinr.ru