

Joint Institute for Nuclear Research

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**JINR is located in Russia
in the city of Dubna in
120 km from Moscow**

Volga River

International Intergovernmental Organization

Founded by 12 countries on 26 March 1956

The Institute has been established with the aim of uniting the efforts, scientific and material potentials of the Institute Member States for the investigations of the fundamental properties of matter.

The main directions of research at the Institute are elementary particle and atomic nuclei physics, physics of condensed states of matter using nuclear physical methods.

Charter of the JINR

JINR Member States

Members



Associate Members



Governmental Agreements



JINR Laboratories

**The Bogolyubov
Laboratory of
Theoretical Physics**



**The Frank
Laboratory of
Neutron Physics**

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



**The Meshcheryakov
Laboratory of
Information
Technologies**

**The Dzhelepov
Laboratory of
Nuclear Problems**



**The Laboratory of
Radiation Biology**

**The Flerov Laboratory of
Nuclear Reactions**



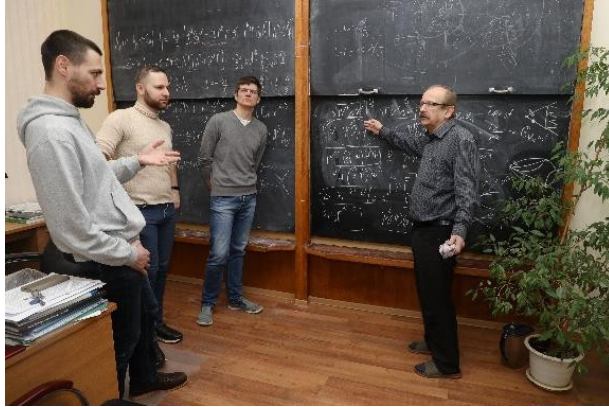
**The University
Centre**

JINR Fact Sheet

- **16** Member States and **5** Associate Member States
- **about 900** partner universities and research centers in 63 countries
- **4200** staff members in **7** laboratories
- **1300** researchers
 - from the Member States except Russia ~ **260**
- **2700** engineers and technicians
- **900** Honorary Doctors and PhD
- **350** students and postgraduates
- **1400** scientific papers/year
- **60** conferences and workshops/year
- **200 M\$** annual budget

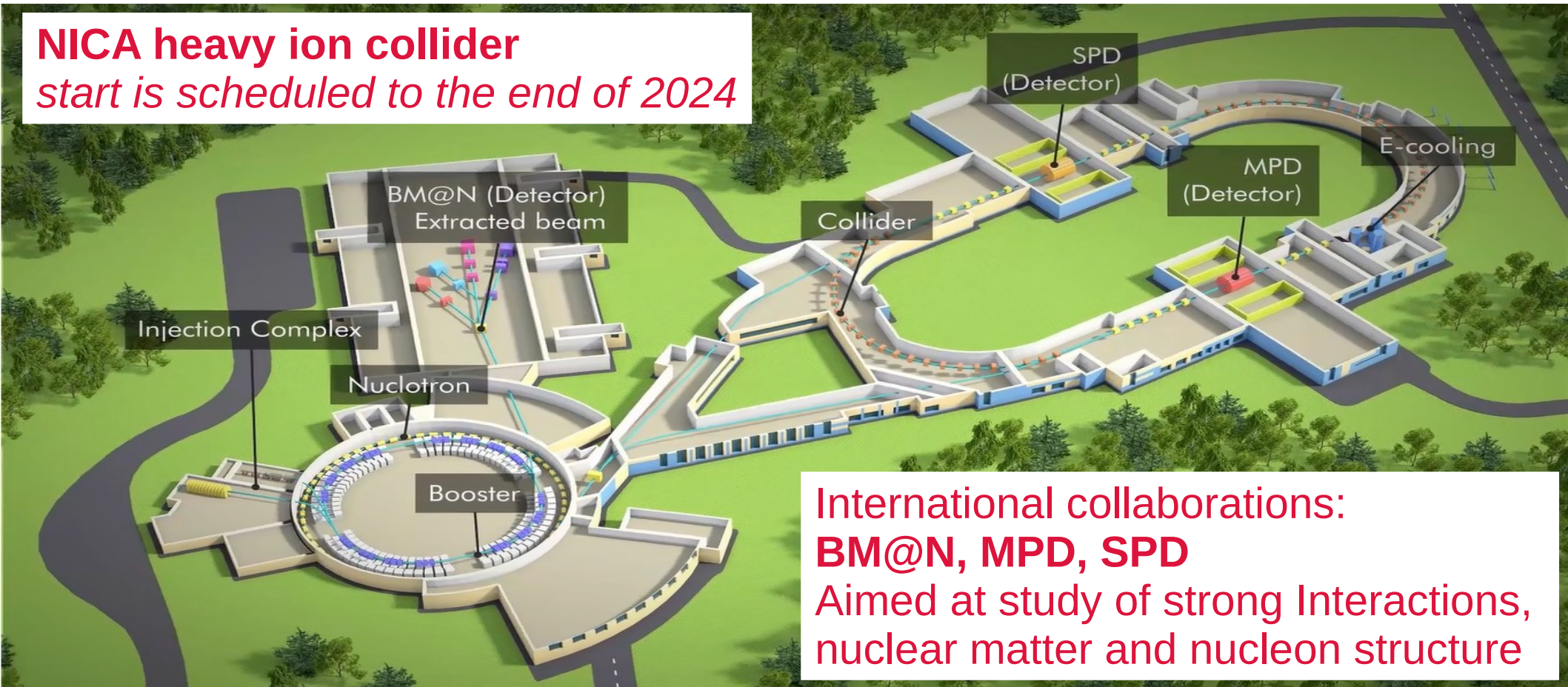
Theoretical Physics at JINR

A unique laboratory with more than **200 researchers** from more than **20 countries** conducting multidisciplinary research.



Particle Physics

NICA heavy ion collider
start is scheduled to the end of 2024



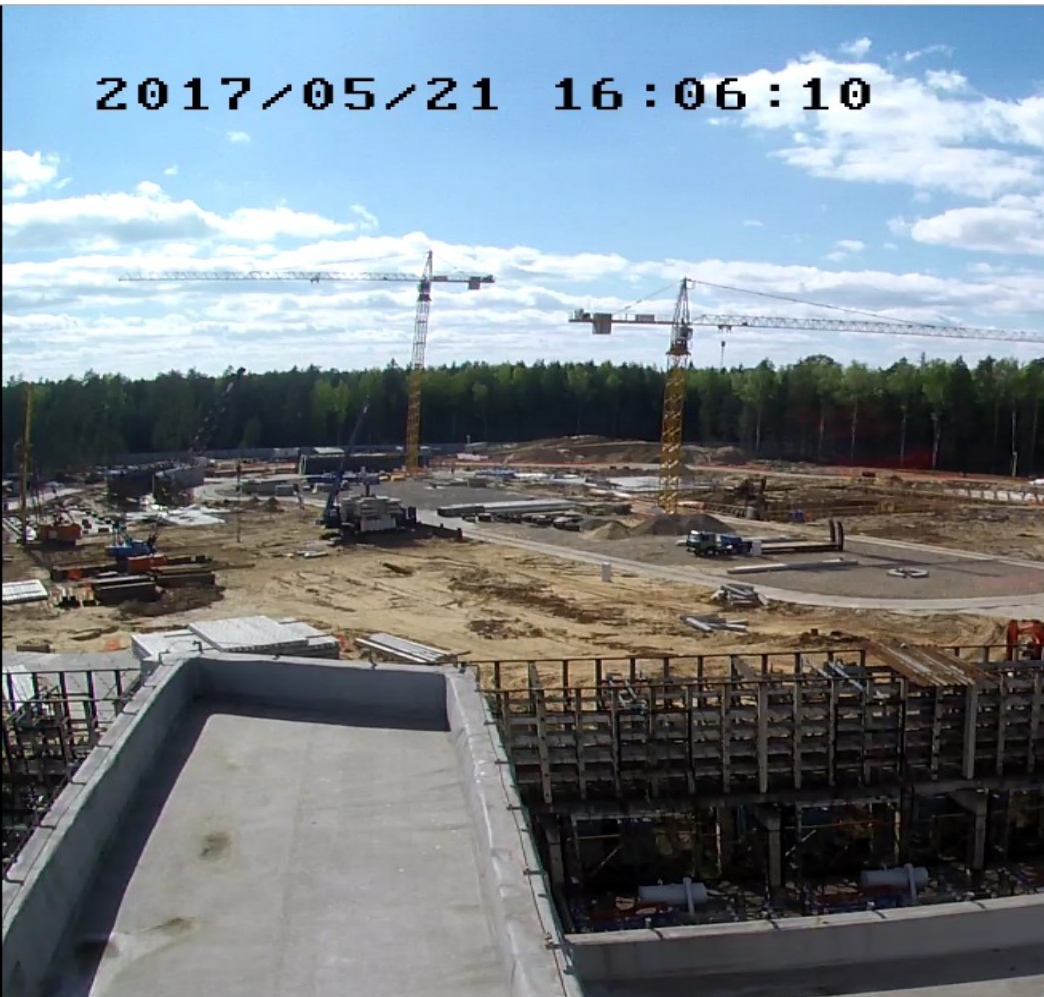
International collaborations:

BM@N, MPD, SPD

Aimed at study of strong Interactions,
nuclear matter and nucleon structure

+ participation in about 20 experiments at CERN, USA, China, Japan

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2023



Particle Astrophysics


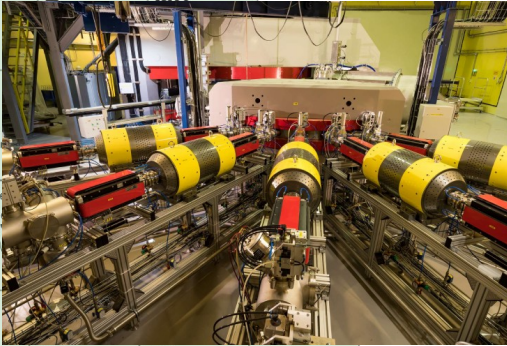
BAIKAL-Gigaton Volume Detector
Deep Underwater Neutrino Telescope
Located in Lake Baikal, Russia
Construction started in 2015
2023: 0.6 km³



Nuclear Physics

- Theoretical and experimental study of nuclear force at low energy
- Synthesis of superheavy elements
- Study of exotic light nuclei

D.I. Mendeleev's Periodic table of elements (2016)

Бор B 10.81 Boron	Углерод C 12.011 Carbon	Азот N 14.007 Nitrogen	Кислород O 15.999 Oxygen	Фтор F 18.998 Fluorine	Неон Ne 20.180 Neon
Алюминий Al 26.982 Aluminum	Кремний Si 28.085 Silicon	Фосфор P 30.974 Phosphorus	Сера S 32.06 Sulfur	Хлор Cl 35.45 Chlorine	Аргон Ar 39.948 Argon
Никель Ni 58.693 Nickel	Медь Cu 63.546 Copper	Цинк Zn 65.38 Zinc	Галлий Ga 69.723 Gallium	Германий Ge 72.630 Germanium	Мышьяк As 74.922 Arsenic
Палладий Pd 106.42 Palladium	Серебро Ag 107.87 Silver	Кадмий Cd 112.41 Cadmium	Индий In 114.82 Indium	Олово Sn 118.71 Tin	Сурьма Sb 121.76 Antimony
Платина Pt 195.08 Platinum	Золото Au 196.97 Gold	Ртуть Hg 200.59 Mercury	Таллий Tl 204.38 Thallium	Свинец Pb 207.2 Lead	Висмут Bi 208.98 Bismuth
Дармштадтий Ds [281] Darmstadtium	Рентгений Rg [282] Roentgenium	Коперниций Cn [285] Copernicium	Нихоний Nh [286] Nihonium	Флеровий Fl 114 Flerovium	Московский Mc 115 Moscovium
				Ливерморий Lv 116 Livermorium	Теннессин Ts 117 Tennessine
					Оганесон Og 118 Oganesson

Condensed Matter Physics



- Material Science
- Nanoscience and Nanotechnology
- Environment Studies

Pulsed Nuclear Reactor IBR-2

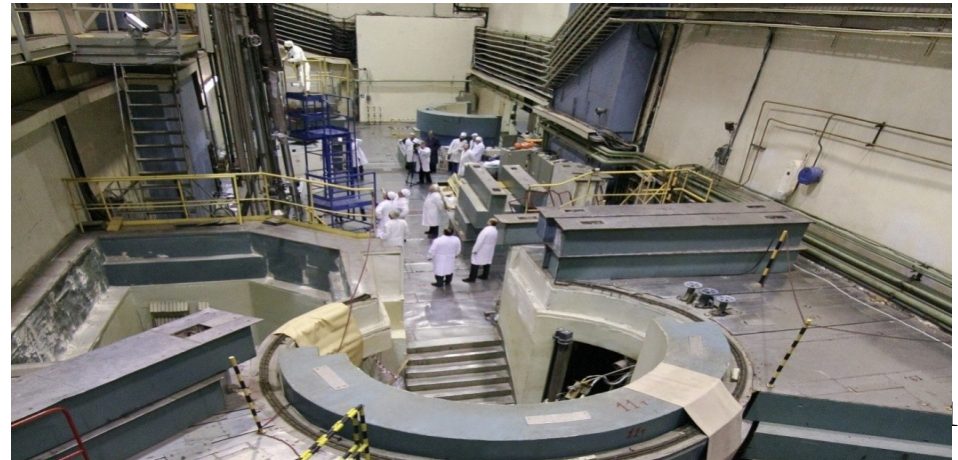
average power 2 MW

pulse frequency 5 Hz

pulse duration 200 μ s

maximum neutron flux in a pulse: 10^{16} n/cm²/s

One of the best neutron sources in the world!



Applied research and Technology transfer

High technology

- Accelerator technology
- Fast electronics and automation
- Vacuum technology
- Cryogenics and superconductive magnets
- Radiation detectors

Life sciences

- Radiobiology
- Radiation genetics
- Medical imaging
- Radiopharmaceuticals
- Radiation therapy

IT

- Large scale data processing (5000 CPU cores, 4 PB disk space, 5 PB tapes)
- Grid and cloud computing
- High performance computing using supercomputer Govorun (1 Pflops)
- Machine Learning

Material science

- Track-etched membranes
- Radiation hardness
- Surface and volume characterization

Education and Training

JINR is not a University. It does not provide basic education. However, there is a University Centre, aimed at facilitating the use of JINR capabilities for education and training.

JINR provides dedicated student programs, internships, topics and co-supervision for Bsc/Msc/PhD theses:

- Fundamental research
- Applied research
- Engineering
- Science management

JINR has more educational activities, including schools for teachers, outreach, and many others

