JINR educational portal («edu.jinr.ru») — open educational resources and modern visualization tools

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Budva, Montenegro
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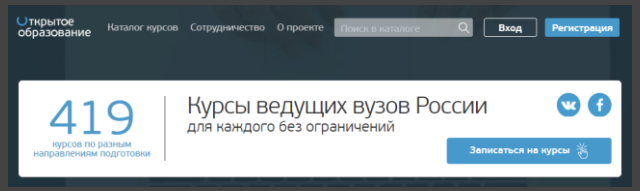
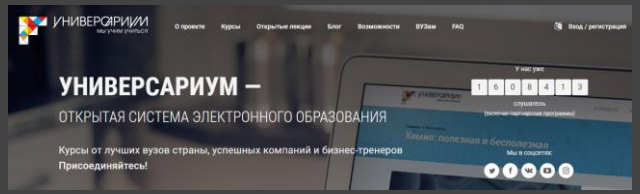
Massive Open Online Courses (MOOC)

For 2018:
the total number of MOOC students
100 million,
and by the end of the year more than
900 universities
around the world announced
11 400 of MOOCs.





Bench-marks

There are relatively few specialized courses developed by scientists working in modern scientific experiments. Such online courses can contribute, on the one hand, to attract the attention of students to the topics of modern experiments, and, on the other hand, reduce the time for training personnel for these experiments.

Tasks:

- popularization of modern scientific research, achievements in science and technology,
- increasing the attractiveness of scientific and scientific-technical careers for students and graduates,
- attracting young scientists and specialists to participate in specific research projects,
- professional development of school and university teachers,
- possibility to include materials related to modern achievements in science and technology in traditional educational courses.

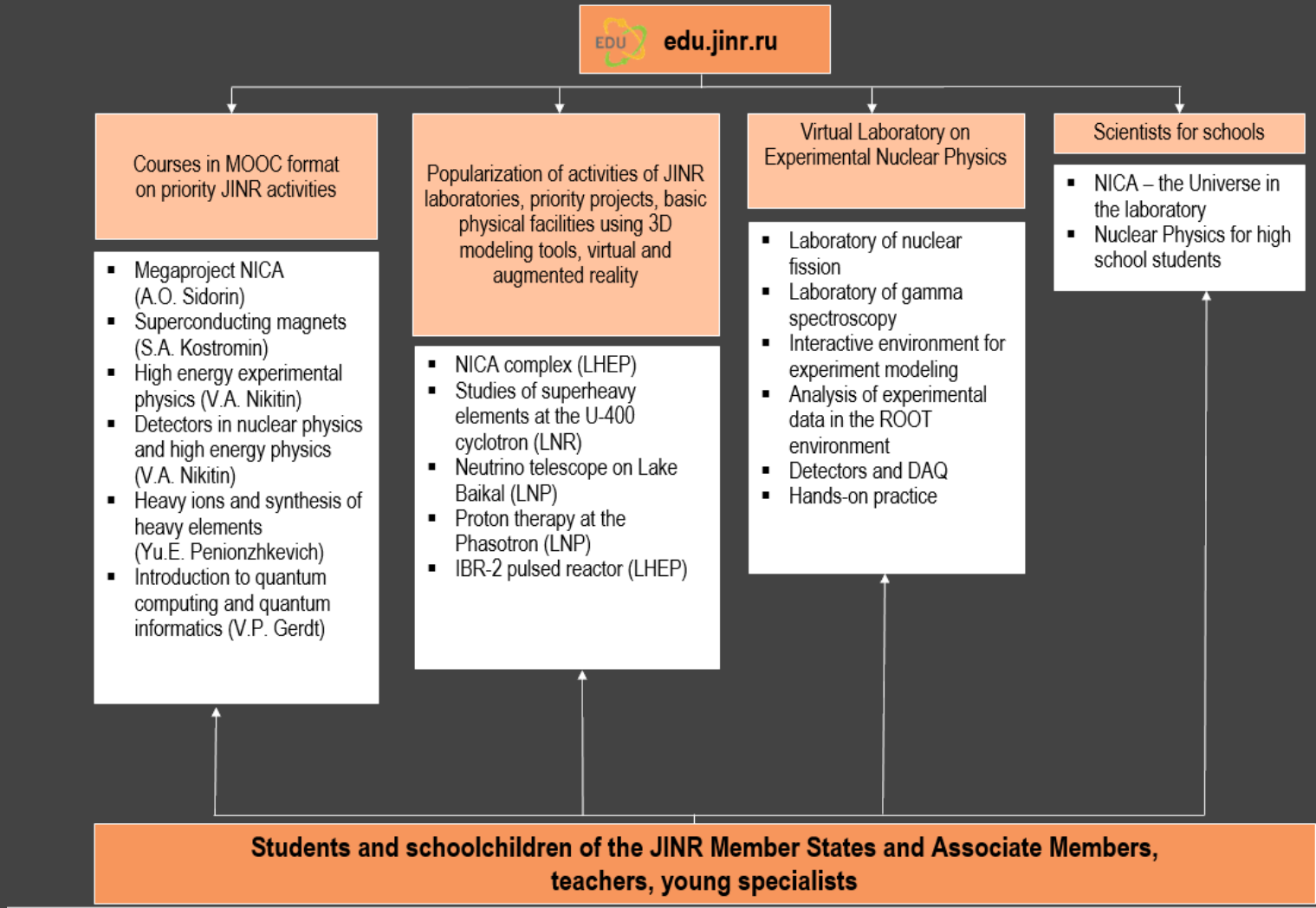
JINR Open Educational Portal
https://edu.jinr.ru

JINR Research Projects

- Accelerator complex NICA (Nuclotron-based Ion Collider fAcility)
- Experiments on the synthesis of new superheavy elements (SHE Factory)
- Research in the field of the physics of condensed state of matter and environmental science carried out at a high-resolution neutron source (IBR-2)
- Deep-water Baikal Neutrino Telescope
- Computing for megaprojects

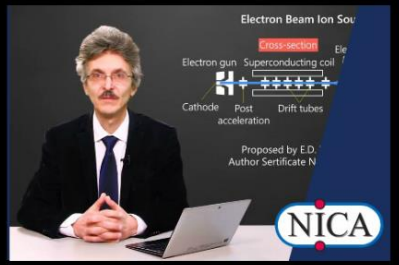
Need for Specialists

- experimental physics
- accelerator physics and technology
- distributed computing and working with big data
- cryogenic technique
- biomedical physics
- radiation material science
- radiobiology
- use of neutrons and synchrotron light in applied research

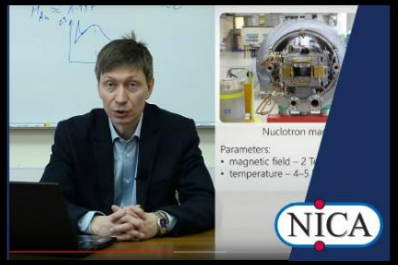

edu.jinr.ru
Courses in MOOC format on priority JINR activities
Megaproject NICA (A.O. Sidorin)
Superconducting magnets (S.A. Kostromin)
High energy experimental physics (V.A. Nikitin)
Detectors in nuclear physics and high energy physics (V.A. Nikitin)
Heavy ions and synthesis of heavy elements (Yu.E. Penionzhkevich)
Introduction to quantum computing and quantum informatics (V.P. Gerdt)
Popularization of activities of JINR laboratories, priority projects, basic physical facilities using 3D modeling tools, virtual and augmented reality
NICA complex (LHEP)
Studies of superheavy elements at the U-400 cyclotron (LNR)
Neutrino telescope on Lake Baikal (LNP)
Proton therapy at the Phasotron (LNP)
IBR-2 pulsed reactor (LHEP)
Virtual Laboratory on Experimental Nuclear Physics
Laboratory of nuclear fission
Laboratory of gamma spectroscopy
Interactive environment for experiment modeling
Analysis of experimental data in the ROOT environment
Detectors and DAQ
Hands-on practice
Scientists for schools
NICA – the Universe in the laboratory
Nuclear Physics for high school students
Students and schoolchildren of the JINR Member States and Associate Members, teachers, young specialists

Courses in MOOC format on priority JINR activities

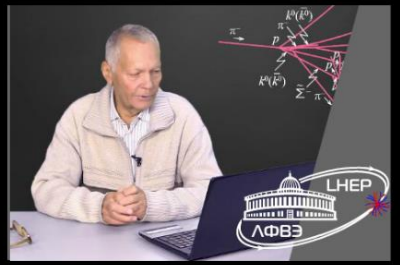
Online Courses of JINR Specialists



MEGA SCIENCE PROJECTS NICA

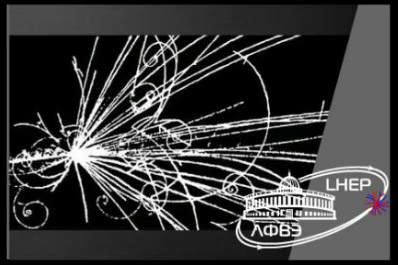


SUPERCONDUCTING MAGNETS



EXPERIMENTAL HIGH-ENERGY PHYSICS

HEAVY IONS AND THE SYNTHESIS OF HEAVY ELEMENTS



DETECTORS IN THE NUCLEAR AND HIGH ENERGY PHYSICS

INTRODUCTION TO QUANTUM COMPUTATION AND QUANTUM INFORMATION

Online Courses of JINR Specialists

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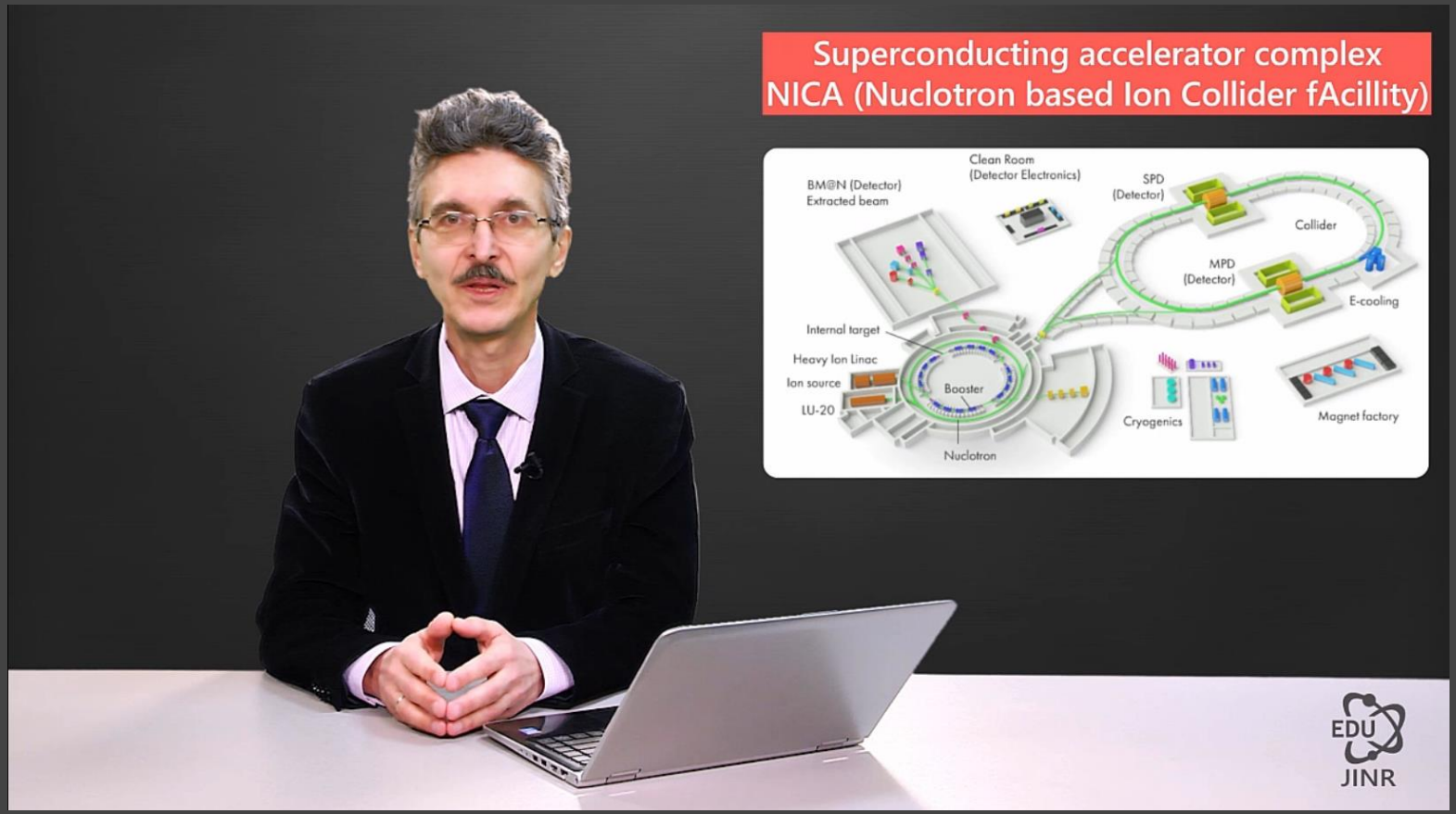
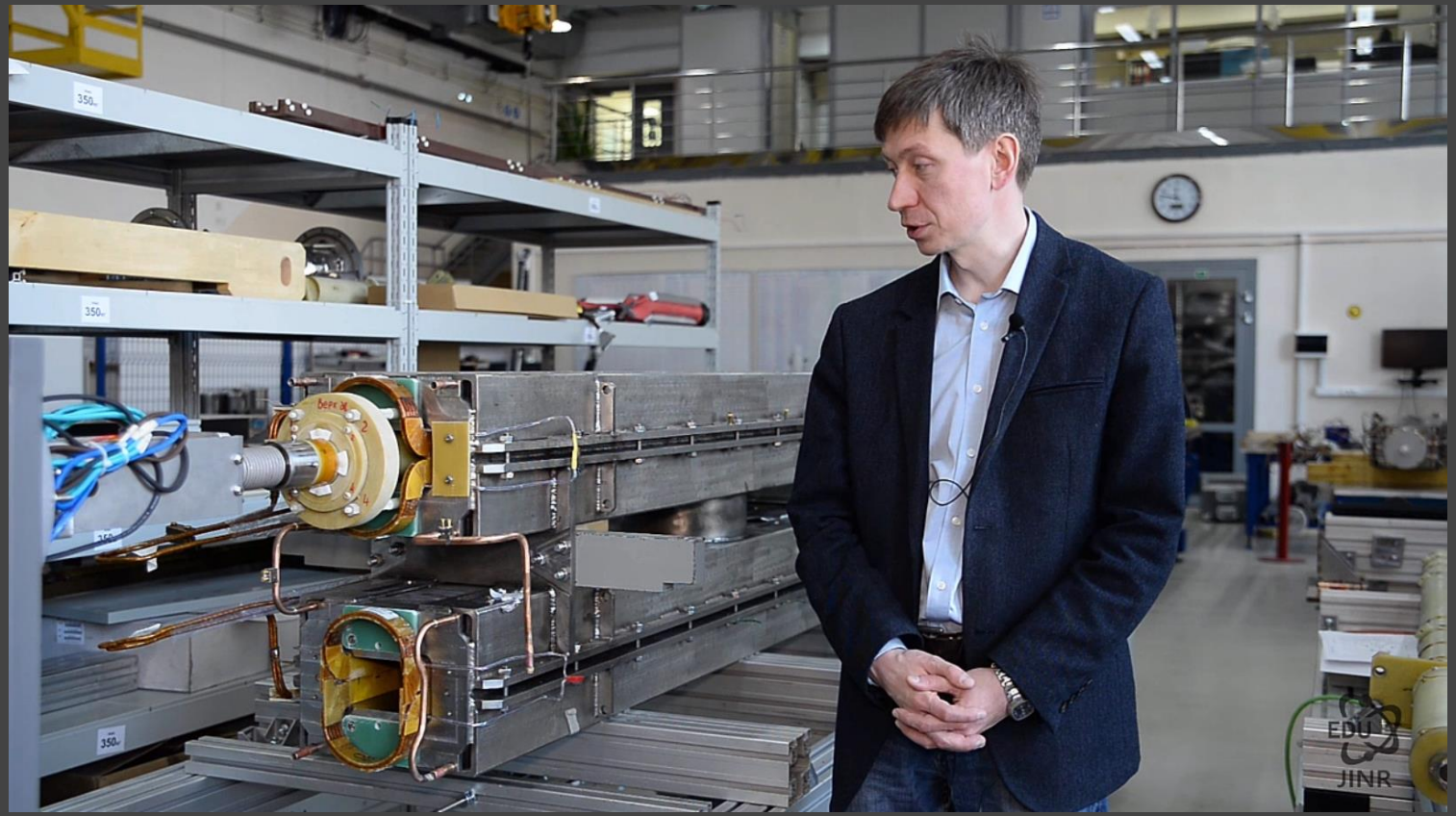
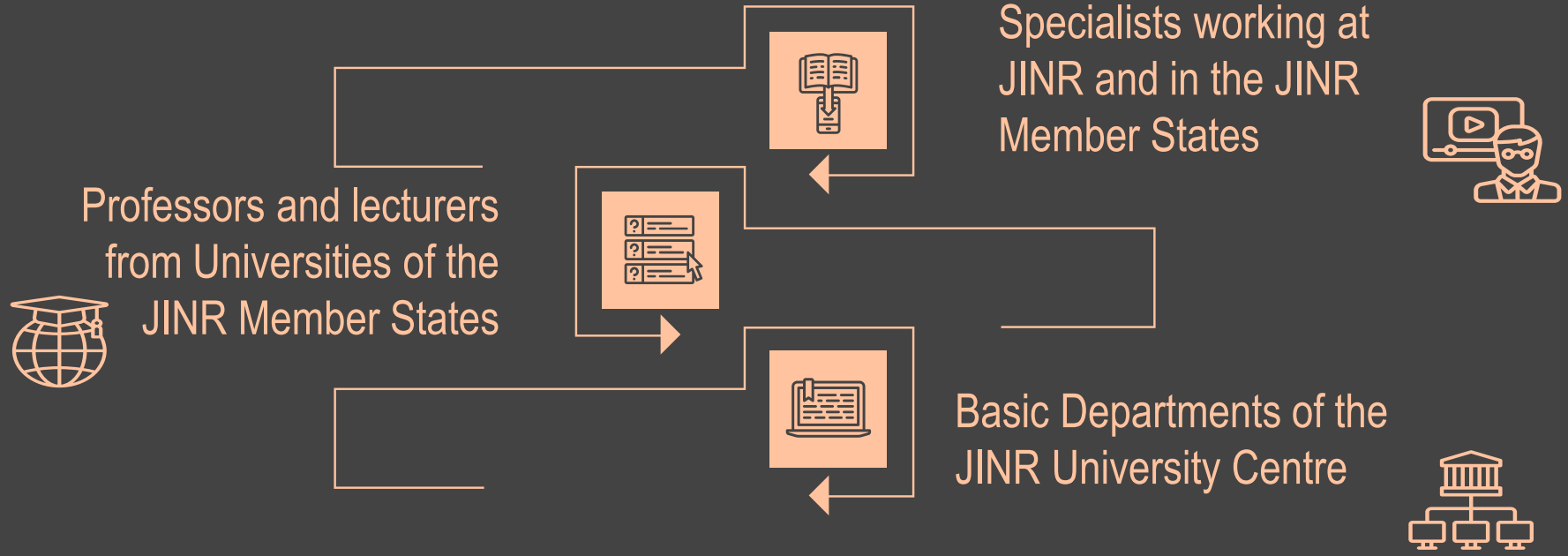


Online Courses of JINR Specialists



Content development for online courses and new educational programs



2019

CorelDRAW GRAPHICS SUITE 2018

AUTODESK 3DS MAX

AR

EDU

HTML

2003

Adobe Photoshop 7.0

Macromedia Flash 5

ONLINE SCIENCE CLASSROOM

HTML

Development Technology

LMS (Learning Management System)

OPENedX

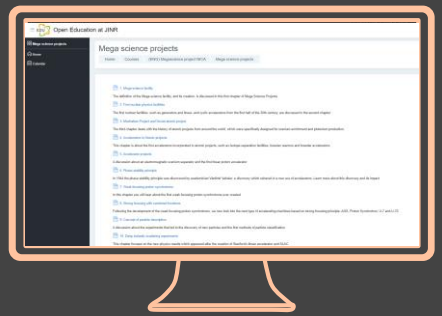
Bb

Sakai

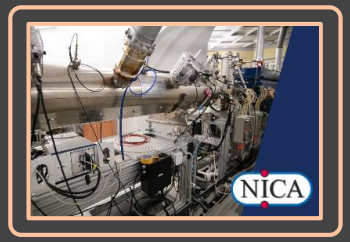
canvas

moodle

- Learning Planning
- Role distribution
- Organization of knowledge and competency testing
- Opportunities for various training material support
- User interaction opportunities in the system



DESKTOP SOFTWARE



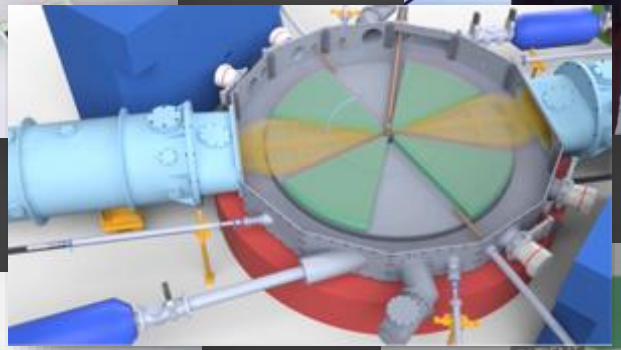
TABLET APP

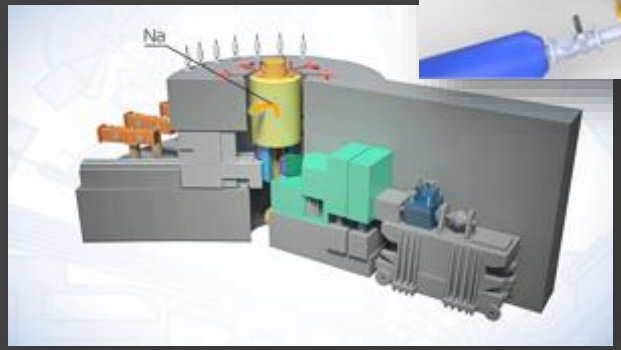
MOBILE WEB

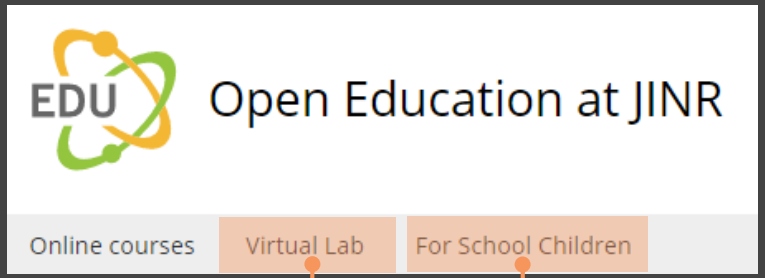
Studio 510

Popularization of activities of JINR laboratories, priority projects, basic physical facilities using 3D modeling tools, virtual and augmented reality

JINR Base Facilities







Virtual Laboratory on Experimental Nuclear Physics

Kseniya Klygina

Scientists for Schools: Nuclear Physics for high school students

Nataliya Vorontsova

Open Lesson
«Collider NICA – the Universe in the laboratory»

Professional Training

Need for specialists

Generation of new knowledge

Highly qualified experts

Online courses and new educational programs

Inclusion of project results into the educational process

Training specialists for the project

DUBNA UNIVERSITY

JINR UNIVERSITY CENTRE

NRNU MEPhI

KFU INSTITUTE OF PHYSICS

SPU AM-MP

Thank you for your attention!