



JINR Newsletter #27, 24 July 2024

Dear colleagues and friends,

Every summer, the Institute hosts a number of scientific schools and conferences. Among them are the Astrophysics School on Lake Baikal and the AYSS JINR School on Lipnya Island, which recently finished. This week, young theoretical physicists from different countries gathered at JINR for a summer school.

JINR's contribution to personnel training was acknowledged at the governmental level in one of its Member States. By the decision of the President of Mongolia, Scientific Leader of the Laboratory of Information Technologies at JINR Vladimir Korenkov was awarded the Friendship Medal.

You will find this and other highlights from the Institute's life, including a wide range of JINR scientific research, in the latest issue of the JINR Newsletter.



Schools & Conferences

School on modern methods of theoretical physics taking place at JINR

This week, BLTP JINR is hosting an international school titled "Advanced Methods of Modern Theoretical Physics: Integrable and Stochastic Systems". 66 participants from Bulgaria, Italy, Russia, and Slovakia are listening to lectures by leading professors, discussing aspects of theoretical physics, and sharing their experiences.



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9th International Conference on Hadron Structure and Fundamental Interactions finishes

Held from 8 to 12 July in Gatchina (Russia), the conference brought together more than 80 scientists, postgraduates, and students from 9 countries. The participants discussed progress in theoretical and experimental hadron physics, QCD, the Standard Model, nuclear physics, etc.

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24th Baikal Summer School on Physics of Elementary Particles and Astrophysics finishes

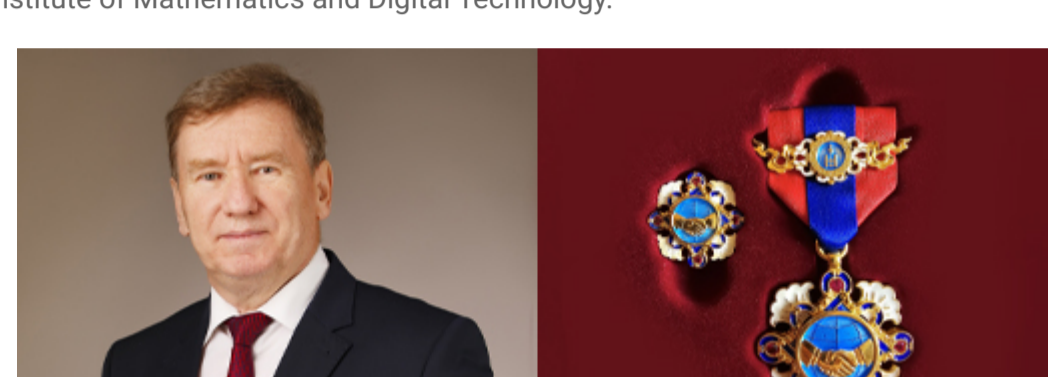
The event, organized by JINR and Irkutsk State University, took place on 10–17 July in Bolshiye Koty village, Russia. This year, students and postgraduates from Bosnia and Herzegovina, China, Cuba, India, Kazakhstan, Moldova, the Netherlands, Russia, and Vietnam participated in the school.

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Awards

Vladimir Korenkov receives Friendship Medal

MLIT JINR Scientific Leader was presented with a state award of Mongolia, the Friendship Medal, for his contribution to the creation of a high-performance computing centre and the training of engineering and technical personnel at the MAS Institute of Mathematics and Digital Technology.



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Publications

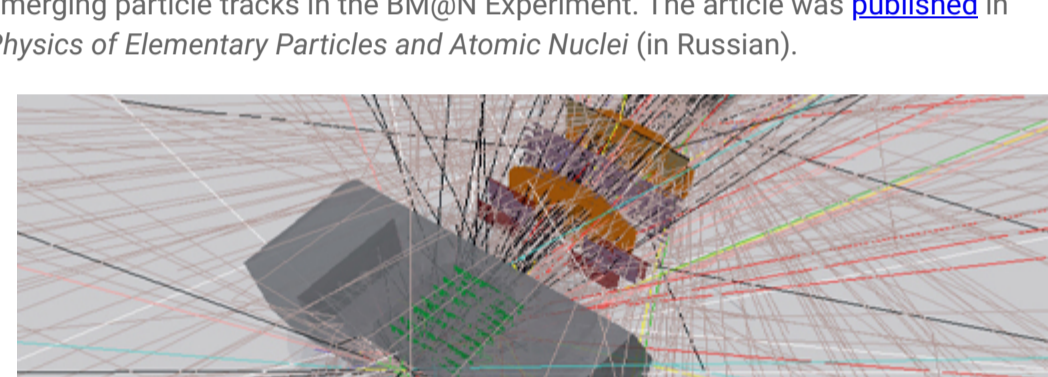
Neutrino mass in effective field theory

Doctors of Physics and Mathematics Anatoly Borisov (Moscow State University) and Alexey Isaev (BLTP JINR) studied the mechanism for generating neutrino mass in the effective field theory. You can read the full text of the paper issued in *Physics of Elementary Particles and Atomic Nuclei* [via the link](#) (in Russian).

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Analysis of particle tracks in BM@N Experiment at NICA in mathematical model of fractal thermodynamics

Specialists from JINR and Tver State University studied the fractal properties of the emerging particle tracks in the BM@N Experiment. The article was [published](#) in *Physics of Elementary Particles and Atomic Nuclei* (in Russian).



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Relaxation time for alignment between quark spin and angular velocity in rotating QCD medium

The paper prepared by JINR scientists in cooperation with Mexican colleagues from the National Autonomous University of Mexico, the University of Colima, and the Autonomous University of Sinaloa was released in *Physical Review D*. You can read the full text [via the link](#).

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Test of vector portal with dark fermions in NA64 Experiment

Scientists at BLTP at JINR, scientific centres and universities of Chile, Germany, and Russia [presented](#) the results of the experiment to search for dark sector particles in decays of neutral mesons in the NA64 Experiment at the Super Proton Synchrotron (SPS) at CERN.

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Verification of simulation program for creating digital twins of DDCs

Using the example of the computing infrastructure of the BM@N Experiment, MLIT JINR and VBLHEP JINR employees [verified](#) results of the simulation program, which is part of the software complex for creating digital twins of distributed data acquisition, storage, and processing centres.

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Algorithm for material analysis by K-edges for energy-sensitive tomography

Scientists at the Laboratory of Nuclear Problems at JINR and the Lomonosov Moscow State University developed an algorithm for qualitative and quantitative material analysis by the K-edges for energy-sensitive computed tomography. The article about this study was [released](#) in the *Journal of Instrumentation*.

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Books

New Book Acquisitions exhibition in S&T Library

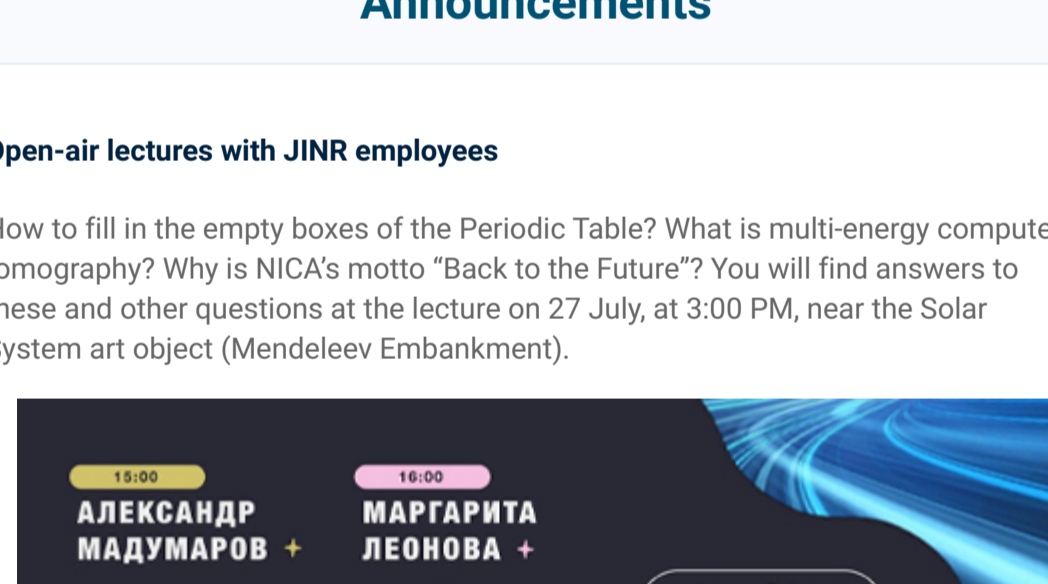
From 22 July to 2 August, the JINR Science and Technology Library invites visitors to the New Book Acquisitions exhibition that features a wide variety of books, educational materials, monographies, reports on quantum mechanics, artificial intelligence, engineering, etc.

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Announcements

Open-air lectures with JINR employees

How to fill in the empty boxes of the Periodic Table? What is multi-energy computed tomography? Why is NICA's motto "Back to the Future"? You will find answers to these and other questions at the lecture on 27 July, at 3:00 PM, near the Solar System art object (Mendelev Embankment).



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Mir invites children and adults to reveal their talents

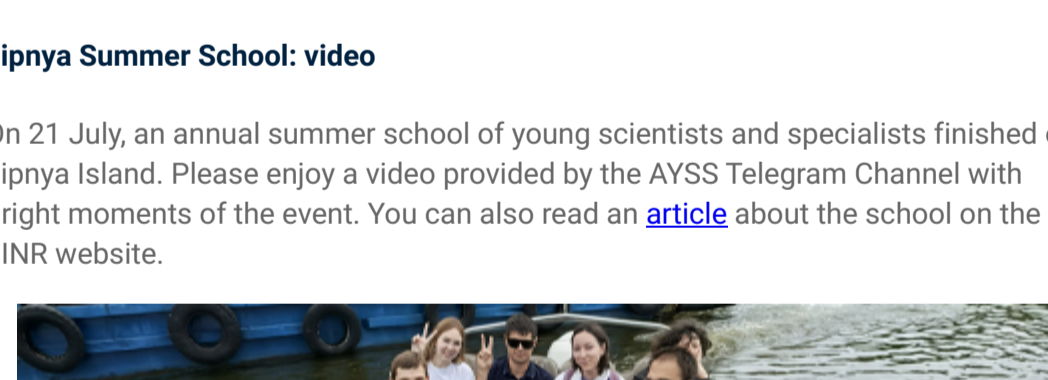
The JINR Mir Cultural Centre announced the enrolment in the creative teams of the centre. All interested are invited to join dancing, singing, and fencing groups. You can find more information about available classes in the post.

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Media

Lipnya Summer School: video

On 21 July, an annual summer school of young scientists and specialists finished on Lipnya Island. Please enjoy a video provided by the AYSS Telegram Channel with bright moments of the event. You can also read an [article](#) about the school on the JINR website.



[WATCH →](#)

Seminar recording

We would like to offer you to watch a recording of the seminar "Observation of 28 GeV resonance in two-muon decay mode on CMS Run I and Run II data" by Olga Kodolova and Alexander Nikitenko.

[WATCH →](#)

Video about past week JINR events

We offer you to watch a video review of highlights from the life of the Institute.

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JINR Weekly Newspaper issued

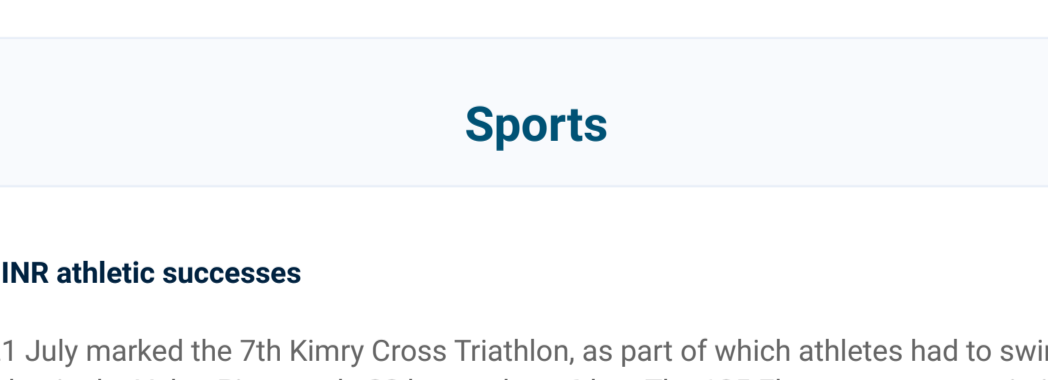
A new issue of the JINR Weekly Newspaper #28 has been published. Please note that you can read an English version of the JINR Newspaper's website.

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Sports

JINR athletic successes

21 July marked the 7th Kimry Cross Triathlon, as part of which athletes had to swim 1 km in the Volga River, cycle 22 km, and run 6 km. The 105 Element team consisting of JINR employees won the competition. Congratulations to the athletes on their successful performance!



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Upcoming Events

Conferences

- [21 – 26 July, International School "Advanced Methods of Modern Theoretical Physics: Integrable and Stochastic Systems", JINR, Dubna](#)
- [21 July – 5 August, Element 105 Workshop, JINR Volga Recreation Centre](#)
- [29 July – 3 August, International Workshop "Supersymmetries and Symmetries – SOS'24", JINR, Dubna](#)

Seminars

- [25 July, 1:15 PM, BLTP, "Development of spectral geometry methods in problems of the Casimir effect theory" by Irina Pirozhenko](#)
- [26 July, 1:15 PM, BLTP, "Study of the quantum structure of supersymmetric gauge theories in four and six dimensions" by Alexandra Budekhina](#)

Culture

- [16 July - 1 September, Daily from 1:00 to 7:00 PM \(except Monday\), JINR Mir Cultural Centre, Art exhibition](#)
- [26 July, 6:00 PM, JINR Universal Public Library, English speaking club](#)

For kids

- [25 July, 6:00 PM, JINR Universal Public Library, "Fiction from the third desk" club meeting](#)
- [26 July, 6:00 PM, JINR Universal Public Library, Growing up from "Let's READERS"](#)

[ALL JINR EVENTS →](#)