

CONFERENCES AND SYMPOSIA

PACS numbers: **01.10. – m**, 01.10.Fv

70th ANNIVERSARY OF THE BIRTH OF V.A. RUBAKOV

Physics of fundamental interactions (Session-conference of the Nuclear Physics Section of the Physical Sciences Division of the Russian Academy of Sciences, dedicated to the 70th anniversary of the birth of V.A. Rubakov (Presidium of the Russian Academy of Sciences, February 17–21, 2025))

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On February 17–21, 2025, in the building of the Presidium of the Russian Academy of Sciences (RAS, Leninskii prosp. 32A, Moscow), a scientific session-conference, The Physics of Fundamental Interactions, of the Nuclear Physics Section of the Physical Sciences Division (PSD) of RAS will be held, dedicated to the memory of the outstanding world-famous Russian theoretical physicist, Academician of the RAS Valery Anatol'evich Rubakov. The conference is dedicated to the 70th anniversary of the birth of V.A. Rubakov (born February 16, 1955, in Moscow).

The conference is organized by the Russian Academy of Sciences, the National Research Nuclear University MEPhI, and the Institute for Nuclear Research of the Russian Academy of Sciences. More than 400 scientists from leading universities and research centers of the Russian Federation and several foreign countries will take part in the conference.

Valery Anatol'evich Rubakov made a fundamental contribution to the development of theoretical physics, cosmology, and elementary particle physics. He largely determined the line of development of high-energy physics both in Russia and throughout the scientific world.

V.A. Rubakov laid the foundations for the modern understanding of processes in the early Universe and their connection with the physics of the microworld. Among his most important achievements are the theory of phase transitions in the early Universe, new models of dark matter, a model of the world with additional spatial dimensions, and a mechanism for the generation of gravitational waves in the expanding Universe.

V.A. Rubakov theoretically predicted the effect of baryonic matter decay near a magnetic monopole that bears his name.

V.A. Rubakov's monographs, "Classical Theory of Gauge Fields," "Introduction to the Theory of the Early Universe," and "The Theory of Groups and Symmetries," written on the basis of four original courses taught in the Physics Department of Lomonosov Moscow State University (MSU), have become reference books for theoretical physicists all over the world.

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Translated by V.L. Derbov

Valery Anatol'evich Rubakov
(16.02.1955 – 19.10.2022)

V.A. Rubakov was a tireless educator and popularizer of science: his books, reviews, articles, speeches, and popular science lectures aroused interest in science among readers and listeners.

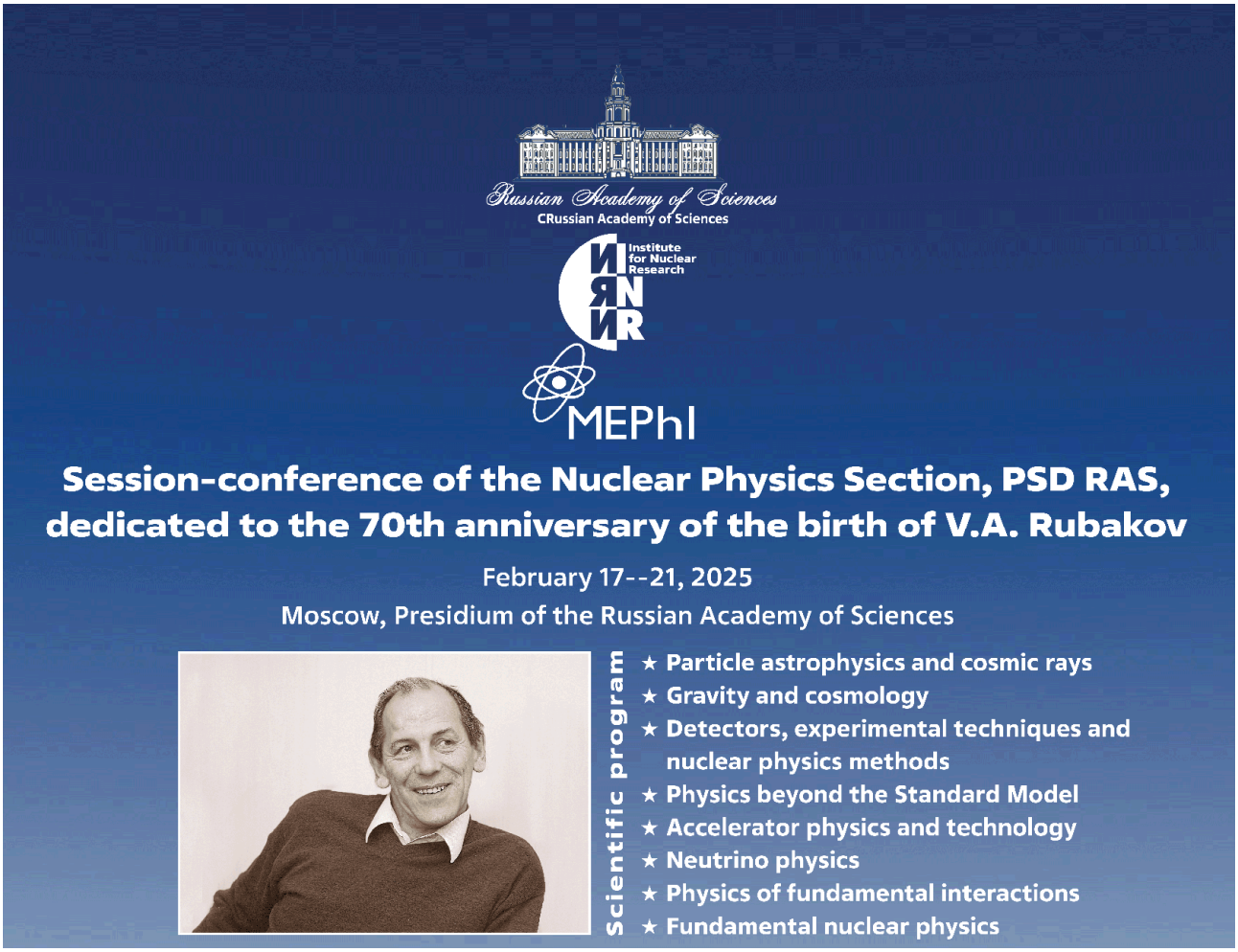
Valery Anatol'evich Rubakov trained a bright constellation of talented disciples: his scientific school was widely recognized throughout the world.

For the scientific program of the conference, a representative Organizing Committee of the conference (chair — Academician of the Russian Academy of Sciences Victor Anatolyevich Matveev, Scientific Director of the Joint Institute for

70th ANNIVERSARY

of the birth of

Valery Anatol'evich Rubakov



Nuclear Research; vice-chair — Corresponding Member of the Russian Academy of Sciences Maxim Valentinovich Libanov, Director of the Institute for Nuclear Research (INR) of the Russian Academy of Sciences; scientific secretary of the Organizing Committee — Professor of the Russian Academy of Sciences Rubtsov Grigory Igorevich, Deputy Director for Research Work of the Institute for Nuclear Research of the Russian Academy of Sciences) selected 21 plenary reports and 308 sectional oral reports (the working language of the conference is Russian) within eight subject sections on the main theoretical and experimental aspects of the physics of fundamental interactions:

- Particle astrophysics and cosmic rays.
- Gravity and cosmology.
- Detectors, experimental techniques, and nuclear physics methods.
- Physics beyond the Standard Model.
- Physics and technology of accelerators.
- Physics of neutrinos.
- Physics of fundamental interactions.
- Fundamental nuclear physics.

Detailed information: https://indico.inr.ac.ru/event/5/.
Preliminary schedule of the conference session:
https: //indico.inr. ac. ru/event/5/timetablee/.

Conference information poster (fragment): conference Organizing Committee.

The conference will present the latest and most relevant results in the following areas:

— ultra-high-energy cosmic rays and the search for the sources of cosmic radiation;

— properties of dark matter and dark energy, problems of modern cosmology;

— black hole physics, including primordial black holes in the early Universe;

— neutrino physics and the search for rare processes;

— quark-gluon plasma and phase transitions in nuclear matter;

— methods of particle detection and the creation of new detectors;

— development of accelerator experiments;

— theoretical research beyond the Standard Model of particle physics.

Particular attention will be paid to the results of experiments at large Russian facilities, including the NICA collider, the Spectrum-Roentgen-Gamma observatory, the VEPP-2000 and VEPP-4M colliders, and the Baikal-GVD neutrino telescope. The results of experiments at CERN and the Super Charm-Tau Factory project in China will be presented. The following plenary reports are planned for the conference:

February 17, 2025

1. **Sergeev A.M.** (National Center for Physics and Mathematics (NCPM), Sarov, Nizhny Novgorod Region). "Extreme light fields";
2. **Butenko A.V.** (Joint Institute for Nuclear Research (JINR), Dubna, Moscow Region). "NICA project facilities";
3. **Ryabov V.G.** (B.P. Konstantinov Petersburg Nuclear Physics Institute of the National Research Center (NRC) Kurchatov Institute, St. Petersburg; Joint Institute for Nuclear Research, Dubna, Moscow Region). "Experiments at the NICA Accelerator Complex";
4. **Braguta V.V.** (Joint Institute for Nuclear Research, Dubna, Moscow Region). "Baryonic matter under extreme conditions."

February 18, 2025

5. **Levichev E.B.** (Budker Institute of Nuclear Physics, SB RAS, Novosibirsk). "Review of promising accelerator projects for particle physics";
6. **Ol'shevsky A.G.** (Joint Institute for Nuclear Research, Dubna, Moscow Region). "Study of neutrino oscillations in accelerator and reactor experiments: results and prospects";
7. **Barabash A.S.** (Alikhanov Institute of Theoretical and Experimental Physics, National Research Center Kurchatov Institute, Moscow). "Neutrino mass: direct measurements and double beta decay";
8. **Alekseev I.G.** (National Research Center Kurchatov Institute, Moscow). "Search for light sterile neutrinos";
9. **Sunyaev R.A.** (Space Research Institute of the Russian Academy of Sciences, Moscow; Max Planck Institute for Astrophysics, Garching, Germany). "Results and prospects of the Spectrum-Roentgen-Gamma mission."

February 19, 2025

10. **Murin Yu.A.** (Joint Institute for Nuclear Research, Dubna, Moscow region). "Detector systems in relativistic nuclear physics today and tomorrow";
11. **Obraztsov V.F.** (Institute for High Energy Physics, National Research Center Kurchatov Institute, Protvino, Moscow region). "Latest results on kaon decays";
12. **Druzhinin V.P.** (Budker Institute of Nuclear Physics SB RAS, Novosibirsk). "Study of e^+e^- annihilation into hadrons at the INP colliders";
13. **Xiaorong Zhou** (University of Science and Technology of China (USTC), Hefei, Anhui, People's Republic of China). "Super Tau-Charm Factory Project in China."

February 20, 2025

14. **Silchenko O.K.** (Lomonosov Moscow State University, Sternberg Astronomical Institute, Moscow). "Young galaxies at redshift greater than 9: new data and paradigm";
15. **Bykov A.M.** (Ioffe Physical-Technical Institute of the Russian Academy of Sciences, St. Petersburg). "Photons, neutrinos, and high-energy cosmic rays in our Galaxy";
16. **Kuznetsov M.Yu.** (Institute for Nuclear Research of the Russian Academy of Sciences, Moscow). "Cosmic rays with energies above 10^{19} eV: new results and new mysteries";
17. **Dzhilkibaev Zh-A.M.** (Institute for Nuclear Research of the Russian Academy of Sciences, Moscow). "Astrophysical results of the Baikal Neutrino Telescope."

February 21, 2025

18. **Kuzmichev L.A.** (Lomonosov Moscow State University, Skobeltsyn Institute of Nuclear Physics, Moscow). "Large-scale detectors for cosmic radiation studies";
19. **Nikitenko A.N.** (National Research Center Kurchatov Institute, Moscow; Imperia1 College, London, United Kingdom). "Search for New Physics beyond the Standard Model at the Large Hadron Collider";
20. **Peshekhonov D.V.** (Joint Institute for Nuclear Research, Dubna, Moscow Region). "Latest results of the NA64 experiment at CERN";
21. **Dudko L.V.** (Lomonosov Moscow State University, Skobeltsyn Research Institute of Nuclear Physics, Moscow). "Physics of the top quark."

On February 20, 2025, as part of the conference session "Physics of Fundamental Interactions," a memorial session dedicated to the scientific legacy of Academician Valery Anatol'evich Rubakov will be held.

Selected conference reports containing new results will be published in the journal *Yadernaya fizika* (*Physics of Atomic Nuclei*).