



# XVI International School on Neutrino Physics and Astrophysics September 23-27, 2024, Sarov, Russia



National Centre for  
Physics and Mathematics

<http://school.lomcon.ru>

Moscow State University  
Branch and Techno Park Sarov

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РОСАТОМ



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РФЯЦ-ВНИИЭФ

# **XVI INTERNATIONAL SCHOOL ON NEUTRINO PHYSICS AND ASTROPHYSICS**

National Centre for Physics and Mathematics, Sarov, Russia  
23-27 September, 2024

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## 23 September, Monday

**09.30 – 10.00**      **Opening**

**Moscow Time** (UTC+3)

**(Central European Summer Time (UTC+2) is 1 hour less)**

Duration of lectures is **50+10 min**, duration of presentations at young scientist's session is **17+3 min**.

Chair: Alexander Studenikin (MSU)

Welcome on behalf of the National Centre for Physics and Mathematics

Welcome on behalf of the Moscow State University

Welcome on behalf of JINR

Welcome on behalf of RFNC-VNIIEF

**Dmitry Bisikalo** (NCPM & RAS), Scientific Programme of National Centre for Physics and Mathematics

**Grigory Kachalin** (VNIIEF & MSU-Sarov), *The Moscow University branch in Sarov "MSU\_Sarov"*

**11.00 Alexander Studenikin** (MSU Faculty of Physics & Branch in Sarov), *Welcome from Programme Committee: The neutrino (history, current status and prospects)*

**11.30 Eugeny Yakushev** (JINR), *Fundamental physics with reactor neutrinos* (60 min)

**12:30 – 13:00**      Group photographing of participants

**13.00 – 14.00**      Lunch

**14.00 Gioacchino Ranucci** (INFN, Milan), *Solar neutrino searches in laboratory experiments* (60 min)

**15.00 Maksim Sorokovikov** (JINR), *High energy neutrino astronomy and neutrino telescope Baikal-GVD* (60 min)

**16.00 – 16.30**      Tea break

### Young scientist's session # 1

**16.30 Alexey Lichkunov** (MSU), *Neutrino oscillations in the axion-like particles superfluid* (20 min)

**16.50 Yuri Litvinenko** (MSU), *Neutrino flavor and spin-flavor oscillations in transversely moving matter* (20 min)

**17.10 Anastasia Nikolaeva** (MSU), *Decoherence effects in propagation of cosmic neutrinos* (20 min)

**17.30 – 18.00**      Tea break

### Young scientist's session # 2

**18.00 Alexander Shchepkin** (SPbPU & Ioffe Physical-Technical Inst. RAS), *Impact of sterile neutrino decay on the dynamics of the expanding Universe* (20 min)

**18.20 Nikolay Pozdnyakov** (NSU), *Leptogenesis via absorption by primordial black holes* (20 min)

**18.40 Vera Postnikova** (MSU), *Investigation of the properties and nature of a diffuse ionized gas medium at various heights and radii of disk galaxies* (20 min)

**19.00 Inna Kozlovskaya** (SPbPU), *Effects of radiation transfer in neutral helium lines formed in ionized interstellar medium* (20 min)

## 19.30 Welcome Drink & Buffet

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## 24 September, Tuesday

**09.00 Edward Boos** (SINP MSU), *The present status of the Standard Model* (60 min)

**10.00 Ivanka Bozovic** (VINCA Inst., Belgrade), *Physics programmes at the present and future e+e colliders* (60 min)

**11.00 – 11.30** Tea break

**11.30 Yury Kudenko** (INR RAS), *Neutrino oscillations in accelerator long-base experiment* (60 min)

**12.30 Alexander Barabash** (Kurchatov Inst., ITEP), *The present status and future prospects of the double beta decay* (60 min)

**13.30 – 14.30** Lunch

### Young scientist's session # 3

**14.30 Anna Dergacheva** (INR RAS), *Detection of muon neutrinos using 3D segmented scintillator detector SuperFGD* (20 min)

**14.50 Daria Fedorova** (INR RAS & MIPT), *Measurement of muon neutrino and antineutrino spectra with improved particle identification in the near detector of the T2K experiment* (20 min)

**15.10 Angelina Chvirova** (MEPhI), *Calibration of the SuperFGD detector taking into account the attenuation of the signal in the WLS fiber* (20 min)

**15.30 Vasilisa Gulyaeva** (MSU), *Modeling the response of the SND detector (Scattering and Neutrino Detector) to events in neutrino physics and physics beyond the Standard Model* (20 min)

**15.50 Alexandra Ivanova** (ISU), *Estimation of the atmospheric neutrinos detection efficiency in the NOvA experiment* (20 min)

**16.10-16.40** Tea break

### Young scientist's session # 4

**16.40 Anna Ivanova** (ISU), *Energy spectrum of primary cosmic rays according to the data of the Tunka-Grande array* (20 min)

**17.00 Roman Monkhoev** (ISU), *Analysis of the spatial and temporal structure of EAS according to the data of the Tunka-Grande array* (20 min)

**17.20 Pavel Volchugov** (SINP MSU), *Detection of gamma rays from the Crab Nebula using data from the TAIGA-IACT facility in the stereo observing mode* (20 min)

**17.40 Alexander Razumov** (MSU), *Stereoscopic observations of HAWC j2019+368 and LHAASO j0341+5258 gamma-ray sources on TAIGA-IACT facilities* (20 min)

**18.00 Ivan Troshin** (MEPhI), *Application of an array of multi-wire drift chambers with shielding by absorber layers for the study of high-energy near-vertical muons* (20 min)

**18.20 Anatoly Kovalev** (SPbPU), *The effect of the temperature of quasars on the spectrum of emitted cosmic rays* (20 min)

**19.00** Dinner

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## 25 September, Wednesday

**09.00 Alexander Studenikin** (MSU), *Electromagnetic properties of neutrinos* (60 min)

**10.00 Carlo Giunti** (INFN Torino), *The Gallium Anomaly* (60 min)

**11.00 – 11.30** Tea break

**11.30 Artem Popov** (MSU), *Astrophysical neutrinos interactions and oscillations* (60 min)

**12.30 Konstantin Stankevich** (MSU), *Neutrino quantum decoherence: Theory and experiment* (60 min)

**13.30 – 14.30** Lunch

**14.30 – 19.00** Excursion program

**19.00** Dinner

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## 26 September, Thursday

**09.00 Dmitry Gorbunov** (INR RAS), *Neutrinos in Early Universe* (60 min)

**10.00 Konstantin Postnov** (MSU), *Multimessenger astronomy* (60 min)

**11.00 – 11.30** Tea break

**11.30 Grigory Rubtsov** (INR RAS), *Astrophysics of particles and neutrinos* (60 min)

**12.30 Yufeng Li** (IHEP), *Supernovae neutrinos* (60 min)

**13.30 – 14.30** Lunch

**14:30-15:30 Bayarto Lubsandorzhiiev** (INR RAS), *Experimental methods of neutrino physics* (60 min)

**15.30-16:30 Andrey Pankratov** (Alekseev Univ., Nizhny Novgorod), *Subterahertz receivers for radio astronomy and dark matter search* (60 min)

**16.30** Tea break

### Young scientist's session # 5

**17.00 Mikhailova Maria** (MEPhI), *Calibration of the RNO-G neutrino radio detector based on signals from solar radio bursts* (20 min)

**17.20 Sergey Zavyalov** (MSU & JINR), *Development of the NTSim software package for modelling neutrino telescopes and evaluating the efficiency of neutrino-induced event detection in the Baikal-GVD experiment* (20 min)

**17.40 Sergey Shavkovich** (PUSHGU), *Search for sub-microsecond bursts of Cherenkov radio emission caused by the interaction of high-energy neutrinos with lunar regolith* (20 min)

**19.30** Conference Dinner

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## 27 September, Friday

**09.00 Alexander Zakharov** (JINR, Kurchatov Inst. – ITEP), *Astrophysical black holes: The case of the black hole in the galactic centre* (60 min)

**10.00 Maxim Dvornikov** (IZMIRAN), *Neutrinos in gravitational fields* (60 min)

**11.00 – 11.30** Tea break

**11.30 Dmitry Akimov** (MEPhI), *Neutrino coherent scattering on nuclei* (60 min)

**12.30 Konstantin Kouzakov** (MSU), *Neutrino interactions with atomic systems and the SATURNE project* (60 min)

**13.30 – 14.30** Lunch

### Young scientist's session # 6

**14.30 Fedor Lazarev** (MSU), *Neutrino interactions with nucleons* (20 min)

**14.50 Maxim Vyalkov** (MSU & MSU Sarov), *Neutrino scattering on superfluid helium with account for neutrino electromagnetic properties and collective effects* (20 min)

**15.10 Maxim Verkhovtsev** (MSU & MSU Sarov), *Nonstandard neutrino interactions in neutrino scattering on atoms and nuclei* (20 min)

**15.30 Kubasov Mikhail** (MSU), *Search for dark vector bosons in coherent elastic neutrino-nucleus and neutrino-atom scattering* (20 min)

**15.50 Ivan Stepanov** (MSU), *Ionization of helium by solar neutrinos* (20 min)

**16.10 Temirlan Husainov** (JINR & MEPhI), *Experimental search for the double beta decay of Zr-96 into excited states of Mo-96* (20 min)

**16.30-18.00** Научный семинар НЦФМ (отв. С.С. Давыденко / А.М. Сергеев)

**18.00 Closing Session of the 16<sup>th</sup> International School on Neutrino Physics and Astrophysics**

### Farewell wishes

**Alexander Sergeev**, the NCPHM Scientific Leader

**Vyacheslav Solovyev**, the RFNC-VNIIEF Scientific Leader

**Alexander Studenikin** (MSU), co-chair of the Programme Committee

**Arkady Yukhimchuk** (RFNC-VNIIEF), co-chair of the Programme Committee

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