

Twenty-Second Lomonosov Conference on Elementary Particle Physics

August 21 - 27, 2025

Alexander Studenikin
Moscow State University

a-studenik@yandex.ru



Dedicated to the 270th Anniversary of
Moscow State University

TWENTY-SECOND LOMONOSOV



Mikhail Lomonosov
1711-1765

CONFERENCE ON ELEMENTARY PARTICLE PHYSICS

Moscow, August 21 - 27, 2025

Tests of Standard Model & Beyond
Theories Beyond Standard Model
Neutrino Physics
Astroparticle Physics
Electroweak Theory
Gravitation and Cosmology
Developments in QCD
Heavy Quark Physics
Physics at Future Accelerators

XVII International
School on Neutrino
Physics and Astrophysics

August 22 - 25, 2025

Under the patronage of

V. Sadovnichy

Rector of MSU

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For contacts: Alexander Studenikin, Chairman

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e-mail: lomcon@phys.msu.ru

22nd Lomonosov Conference on Elementary Particle Physics

Moscow State University,
21-27 August 2025,
Moscow, Russia

33 years of running
since 1992

www.lomcon.ru



**22nd Lomonosov Conference on
Elementary Particle Physics** is organized by
Faculty of Physics of Moscow State University
under the patronage of Rector of MSU
Academician Victor Sadovnichy



This is the **22nd** event in the series that started in **1992** when the conference got the name of **Mikhail Lomonosov**

... brilliant Russian encyclopaedist of the era of the Empress Catherine II



М.В.Ломоносова
(1711-1765)

Moscow State University was founded **270** years ago based on his plan and initiative

- By holding **22nd** Lomonosov Conference, we are celebrating **270th Anniversary of Moscow University**





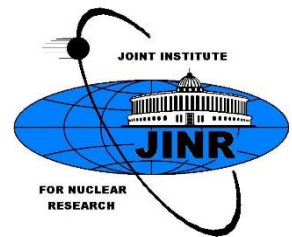
Academician Andrey Fedyanin
Vice Rector of MSU



We are thankful to
Professor Vladimir Belokurov,
Dean of Faculty of Physics,
for the support
of organizing committee
during a period of many months
of the conference preparation

22th Lomonosov Conference on Elementary Particle Physics

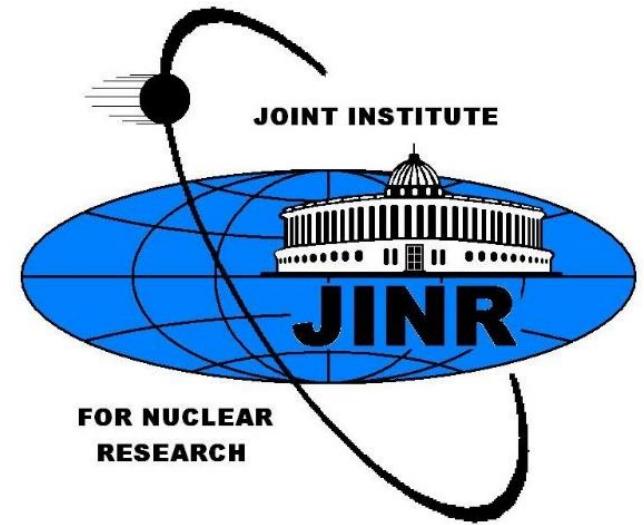
...in closed cooperation with



Joint Institute for Nuclear Research
(Dubna)



Institute for Nuclear Research
of Russian Academy of Sciences



● **Academician Grigory Trubnikov**
Director of JINR

Moscow State University
Faculty of Physics

Dedicated to the 270th Anniversary of
Moscow State University

TWENTY - SECOND
LOMONOSOV



Mikhail Lomonosov
1711-1765

CONFERENCE
ON
ELEMENTARY
PARTICLE
PHYSICS

Moscow, August 21-27, 2025

Faculty of Physics, Moscow State University
Joint Institute for Nuclear Research
Institute for Nuclear Research Russian Academy of Sciences
Skobeltsyn Institute of Nuclear Research, Moscow State University
Bruno Pontecorvo Neutrino and Astrophysics Laboratory (MSU)
Ministry of Science and Higher Education of Russia
State Corporation ROSATOM
All-Russian Scientific Research Institute of Experimental Physics
National Centre for Physics and Mathematics (Sarov)

 INTERREGIONAL CENTRE
FOR ADVANCED STUDIES

Moscow State University
Faculty of Physics



Бруно Понтекорво
1913-1993

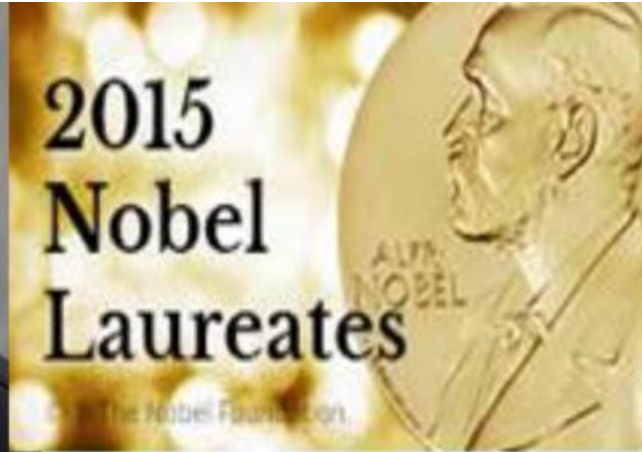
SEVENTEENTH
INTERNATIONAL
SCHOOL
ON
NEUTRINO
PHYSICS and
ASTROPHYSICS

Moscow, August 22-27, 2025

Faculty of Physics, Moscow State University
Joint Institute for Nuclear Research
Institute for Nuclear Research of Russian Academy of Sciences
Skobeltsyn Institute of Nuclear Research, Moscow State University
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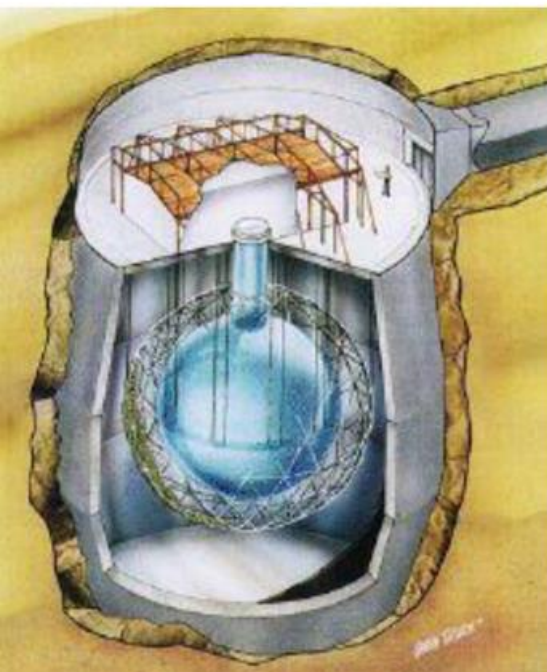
Dedicated to the 10th Anniversary of
Nobel Prize 2015 in physics



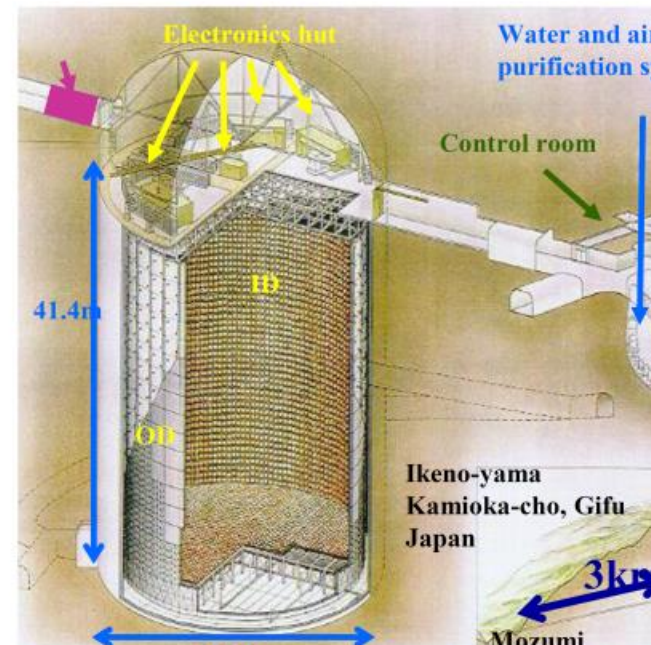
Arthur McDonald

The Nobel Prize in Physics 2015

Takaaki Kajita



«for the discovery
of neutrino
oscillations,
which shows
that
**neutrinos
have mass**»





Bruno Pontecorvo,

«Inverse β processes and nonconservation of leptonic charge»,

JINR Preprint P-95, Dubna, 1957.

3 pages :

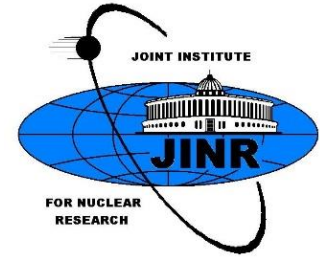
68 years of mixing
and oscillations !

«Neutrinos in vacuum can transform themselves into antineutrino and vice versa. This means that neutrino and antineutrino are particle mixtures... So, for example, a beam of neutral leptons from a reactor which at first consists mainly of antineutrinos will change its composition and at a certain distance R from the reactor will be composed of neutrino and antineutrino in equal quantities».

Бруно Понтекорво

Staff member at
Faculty of Physics of
Moscow State University
1966 - 1986

if $m_\nu \neq 0$
then $\nu \leftrightarrow \bar{\nu}$
in vacuum



- Since 1950 Bruno Pontecorvo lived in Dubna and was a staff member of Joint Institute for Nuclear Research
- During 1966 - 1986 Bruno Pontecorvo was Head of Department of Particle Physics at Faculty of Physics of Moscow State University



August 22, 2025

19.00

The movie

«Maksimovic.

The Story of Bruno Pontecorvo»

Original idea and screenplay:

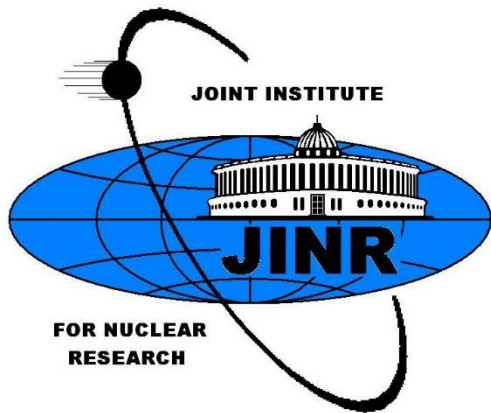
Giuseppe Mussardo

Historical research:

Luisa Bonolis

Directed by:

Diego Cenetempo



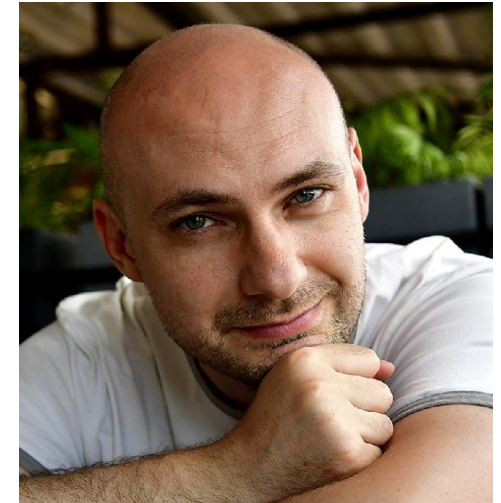
Director of Dzelepov Laboratory of Nuclear Problems of JINR
Professor Eugeny Yakushev



We are thankful to **Academician Maxim Libanov**,
Director of Institute for Nuclear Research of RAS,
for the support provided in very important issue
in preparation of the conference

Vice Director of INR RAS

● **Professor Alexander Panin**





It is a great honour for me to give floor to

Professor Arkady Yukhimchuk
from Russian Nuclear Centre

&

National Centre for Physics and Mathematics (Sarov)



Национальный центр
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РОСАТОМ



Р Ф А Ц
ВНИИЭФ



НАЦИОНАЛЬНЫЙ
ИССЛЕДОВАТЕЛЬСКИЙ ЦЕНТР
"КУРЧАТОВСКИЙ
ИНСТИТУТ"

Lomonosov Conferences on Elementary Particle Physics

since 1992

... short prehistory of
Lomonosov Conferences (since 1992)

- in 80th a series of 4 workshops for young scientists
“Synchrotron radiation and its applications” was organized
by Moscow State University
- at 4th Workshop in 1988 the organizers decided
to complete realization of these workshops
- a year later (1989) it was proposed by myself to renew
that series of events on a new basis with much broader
scientific programme and to include more general issues of
particle physics
- the conference was planned to be held in September
1991 in world famous Samarkand
(Uzbekistan – Soviet Union),
- ... was canceled because of unstable and unpredictable
political situation (Putsch in Soviet Union, August 1991)

- the project of a new meeting was not given up and the conference on “**Elementary Particles and External Fields**” was organized by Moscow State University in **Yaroslavl (Russia) , April 1992**
- during preparation of that conference it was proposed by myself that we should start a series of **full-scale international conferences** under the title of

“**Lomonosov Conference on Elementary Particle Physics**”

... **the birth of Lomonosov Conferences** ...

- this story has been included into the preamble of the **Yaroslavl conference 1992** programme
(is on view at the coffee-break hall)

ШКОЛА МОЛОДЫХ УЧЕНЫХ МГУ "ЭЛЕМЕНТАРНЫЕ ЧАСТИЦЫ И ВНЕШНИЕ ПОЛЯ"
MOSCOW UNIVERSITY CONFERENCE "ELEMENTARY PARTICLES AND EXTERNAL FIELDS"

Ярославль, 20-25 апреля 1992 г.

Московский государственный университет им. М.В. Ломоносова
Ярославский государственный университет
ТОО "АВЕ"

Организационный комитет

| | |
|--------------------------|--|
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Настоящая школа молодых ученых МГУ является пятой в серии конференций (Москва, 1983; Кишинев, 1985; Майкоп, 1989; Минск, 1990), проводимых кафедрой теоретической физики физического факультета МГУ при содействии совета молодых ученых МГУ. По первоначальному замыслу организаторов на конференциях должна была обсуждаться проблема квантовых процессов во внешних электромагнитных полях, однако уже со второй конференции (1985 г.) отчасти прослеживается тенденция к расширению тематики. В программах трех последних конференций наряду с вышеназванной проблемой включается широкий круг вопросов физики элементарных частиц, теории поля, гравитации и астрофизики. В дальнейшем данная серия будет продолжена под общим названием "Ломоносовские конференции по физике элементарных частиц". Шестая Ломоносовская конференция, запланированная на осень 1993 года, будет посвящена вопросам космомикрофизики и калибровочным теориям.

Участники конференции прозывают в Ярославль по адресу: ул. Свердлова, дом 16. Заседания проходят в конференц-зале дома № 5 по Волжской набережной, в этом же доме находятся оргкомитет и технический секретариат конференции.

Технический секретариат: Ляба Василевская, Маргарита Лена Мерзюнова, Марина Геннадиевна Невзорова и Александр Пархомов.

Programme of

"5th School of Young Scientists of Moscow State University on Elementary Particles and External Fields"

Yaroslavl, Russia,
April 20-25, 1992

"... In the future this series of conferences will be continued under the title "Lomonosov Conference on Elementary Particle Physics".

The 6th Lomonosov Conference will be organized in 1993."

ЗАСЕДАНИЕ 7: 11.35-13.50 (председатель В.А.Царев)

Д.А.Василевская, А.А.Гвоздев, Н.В.Михеев:

Физика массивных нейтрино во внешних электромагнитных полях (15 мин.).

D.Giugni:

Probing the Sun: Borexino experiment (30 min).

О.А.Займидорога:

Измерение магнитного момента нейтрино на уровне 10^{-12} магнетона Бора (30 мин.).

Uitiello:

Massive neutrinos, their oscillations and unitary inequivalent representation (30 min).

А.В.Кузнецов, Н.В.Михеев:

Тормозное излучение при рассеянии нейтрино в поле кулоновского центра (15 мин.).

ОБЕД : 14.00

about
30 presentations

ЗАКРЫТИЕ КОНФЕРЕНЦИИ : 19.00 .

СПИСОК УЧАСТНИКОВ КОНФЕРЕНЦИИ

Артимович Геннадий Константинович (Филиал ЭТИ)

Багров Владислав Гаврилович (ИСЭ СО РАН)

Белов Владимир Владимирович (МИЭМ)

Болтовский Дмитрий Владимирович (ТПИ)

Василевская Любовь Александровна (Яр.ПИ)

Uitiello Giuseppe (Univ. of Salerno, Italy)

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Волкова Юлия Львовна (МИЭМ)

Вшивцев Александр Сергеевич (МИРЭА)

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Giamarchi Marco (INFN-Milan, Italy)

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Кречет Владимир Гергиевич (Яр.ПИ)

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Лобанов Андрей Евгеньевич (МГУ)

Мерзорова Елена Владимировна (МГУ)

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Мостепаненко Владимир Михайлович (СПТИ)

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Пархоменко Александр Яковлевич (Яр.ГУ)

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Скобелев Владимир Васильевич (МЭПИ)

Смирнов Александр Дмитриевич (Яр.ГУ)

Spillantini Piero (INFN-Florence, Italy)

Старинец Андрей Олегович (МГУ)

Студеникин Александр Иванович (МГУ)

Трифонов Андрей Юрьевич (ТПИ)

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Филиппов Геннадий Михайлович (Чувашский ГУ)

Фильченков Михаил Леонидович (МНТП "Брейншторм")

Харитон Наум Григорьевич (Яр.ГУ)

Hokee Minn (Seoul National Univ., Korea)

Царев Владимир Александрович (ФИРАН)

50 participants

За информацией о Ломоносовских конференциях по физике элементарных частиц обращайтесь, пожалуйста, в оргкомитет к А.И.Студеникину:

119899, Москва, Ленинские горы, МГУ, физический факультет, кафедра теоретической физики, тел.: 939-31-77.



1992-2025

33 years
of
Lomonosov Conference

...that was hard job to start the conference ...
the faces have changed, but the Conference
remains and develops ...

Since very beginning the project of

international

Lomonosov Conference
on Elementary Particle Physics

attracted interest and support of the

Russian national and international

scientific communities



Professor

Giordano Diambrini-Palazzi
(1926-2012)

“Sapienza”
Universita di Roma

“The status of the
MQC experiment in Italy”
August 30, 1997

1997 – 8th Lomonosov Conference on
Elementary Particle Physics

Proceedings of
Lomonosov Conferences
1992 and 1993

published by
Accademia Nazionale dei Lincei
Rome, Italy

PARTICLE PHYSICS, GAUGE FIELDS AND
ASTROPHYSICS

PROCEEDINGS

5th and 6th Lomonosov Conferences on Elementary Particles Physics:

Elementary Particles and External Fields
(Yaroslavl, Russia, 20-25 April 1992)

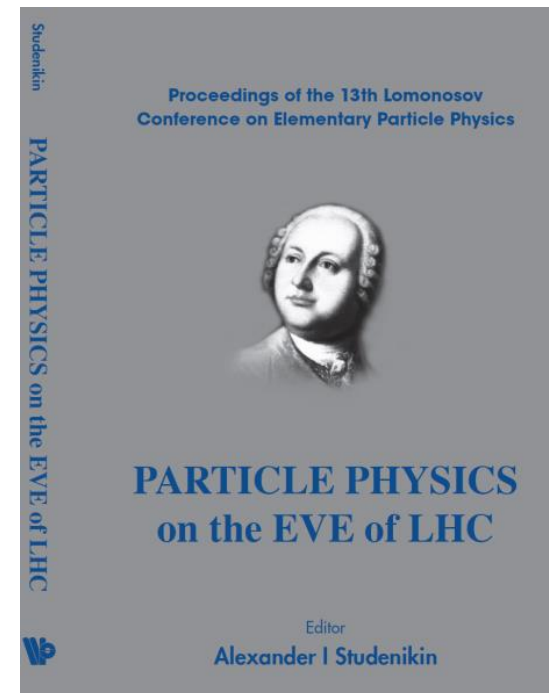
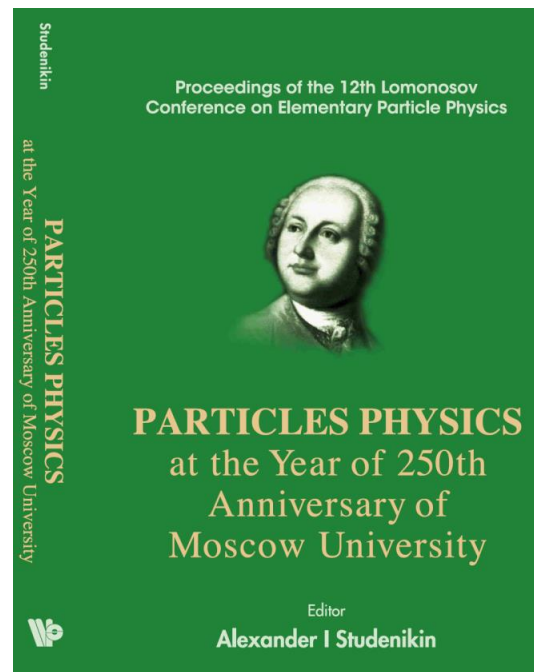
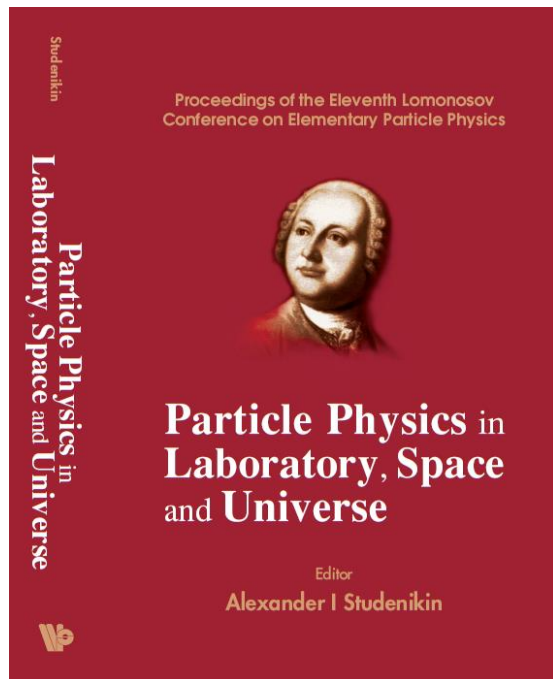
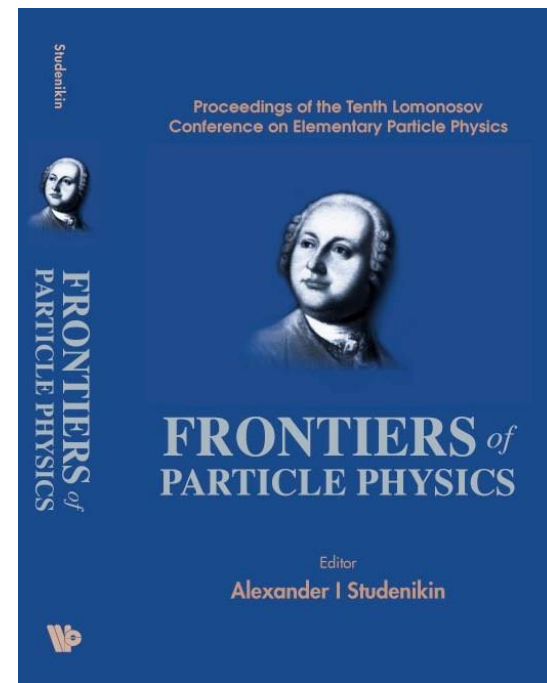
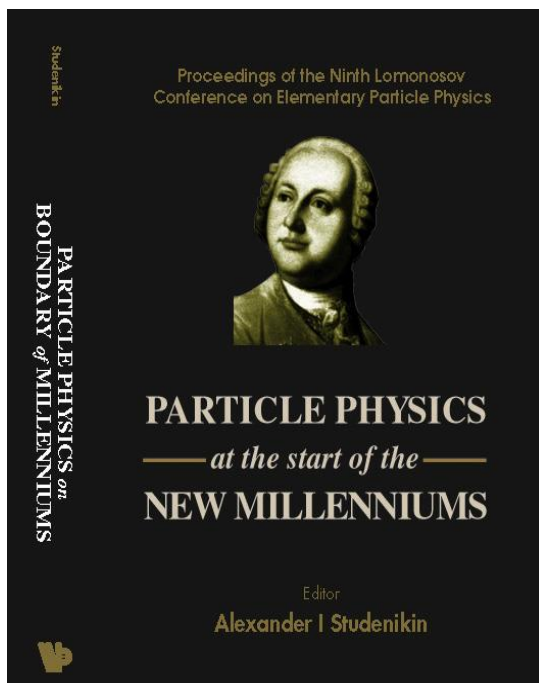
Cosmomicrophysics and Gauge Fields
(Moscow, Russia, 24-31 August 1993)

Edited by
Alexander I. Studenikin

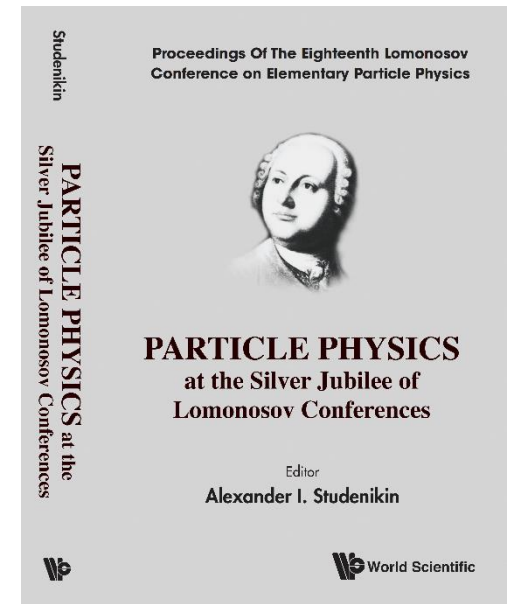
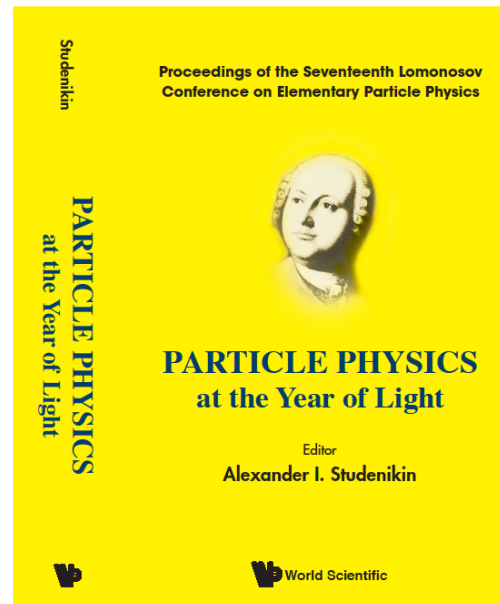
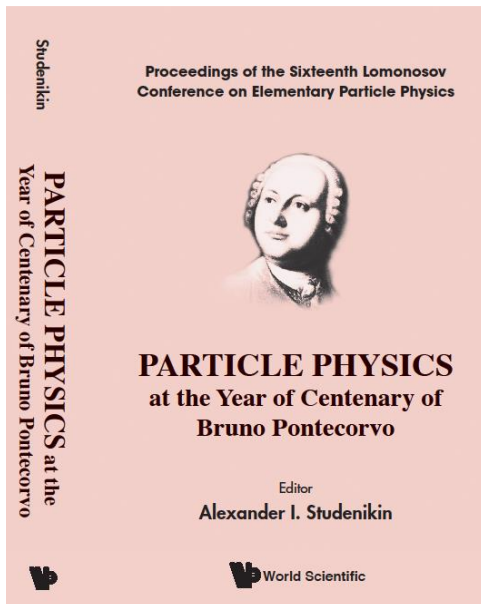
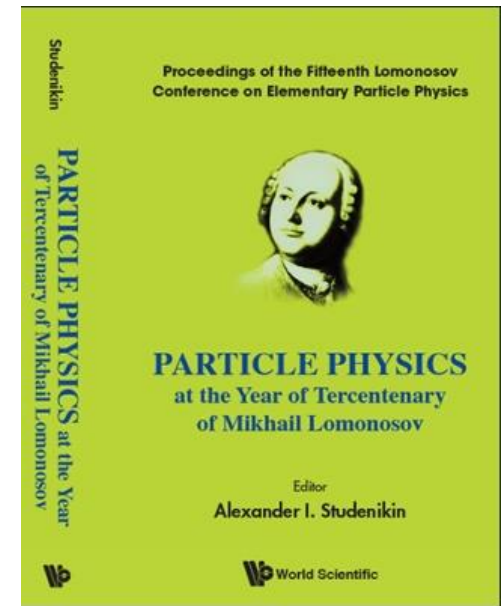
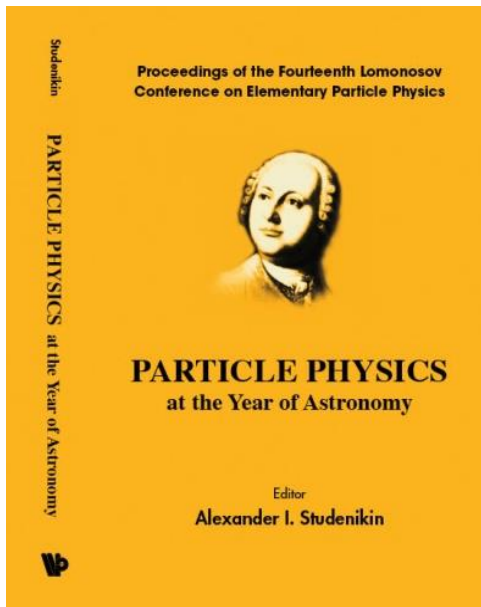


...thanks to kind decision of
President Giorgio Salvini

Proceedings of
Lomonosov Conferences
1999, 2001, 2003,
2005, 2007
published by
World Scientific Co
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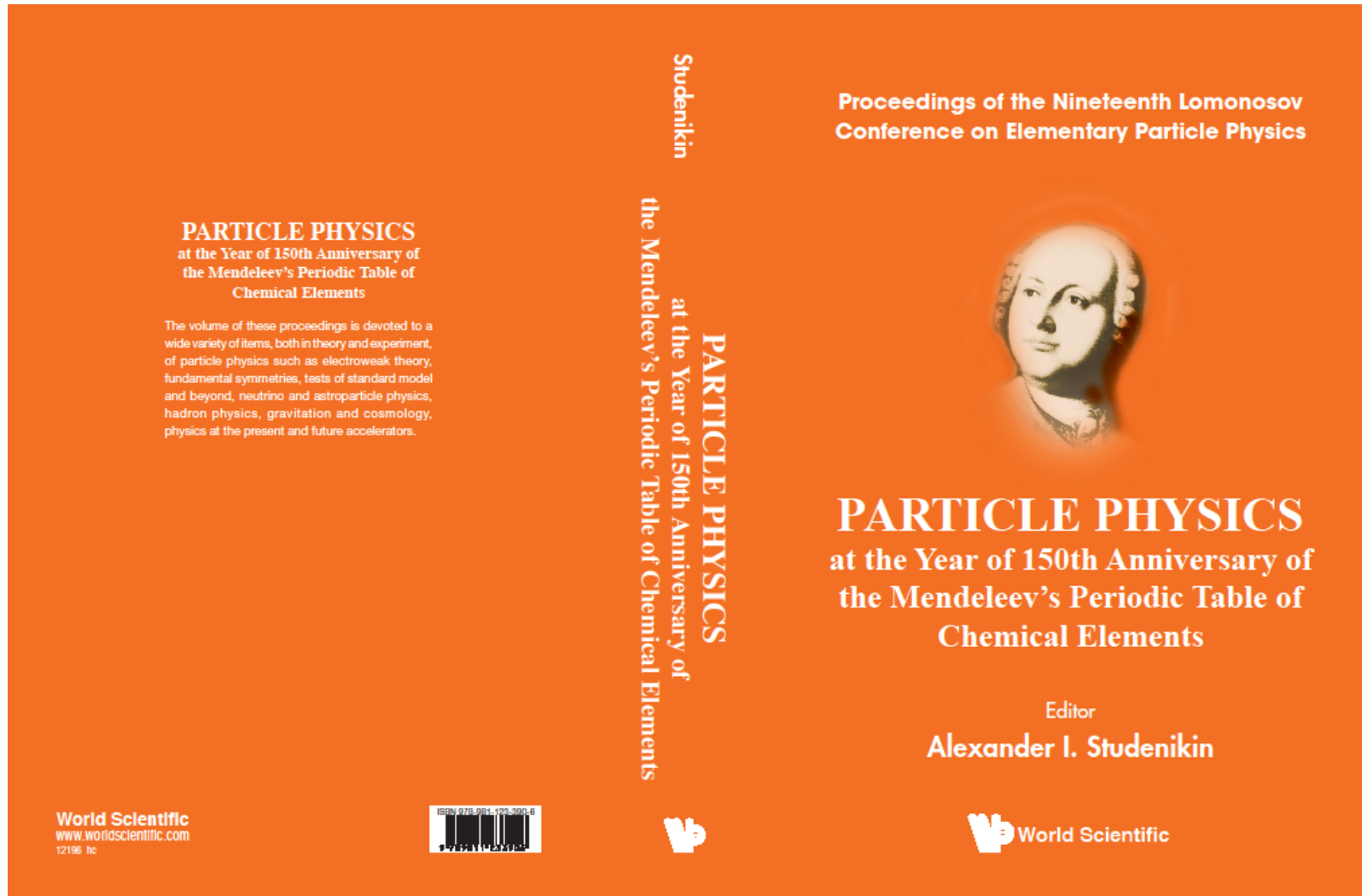


Proceedings of
Lomonosov Conferences
2009, 2011, 2013,
2015, 2017
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The **proceedings** of 19th Lomonosov Conference on Elementary Particle Physics

World Scientific, Singapore



The **proceedings** of
20th and **21st** Lomonosov Conference on
Elementary Particle Physics
2021 and **2023**

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The **proceedings** of
22nd Lomonosov Conference on
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2025

will be also publishes
instructions will be sent soon

deadline for sending papers to
Organizing Committee

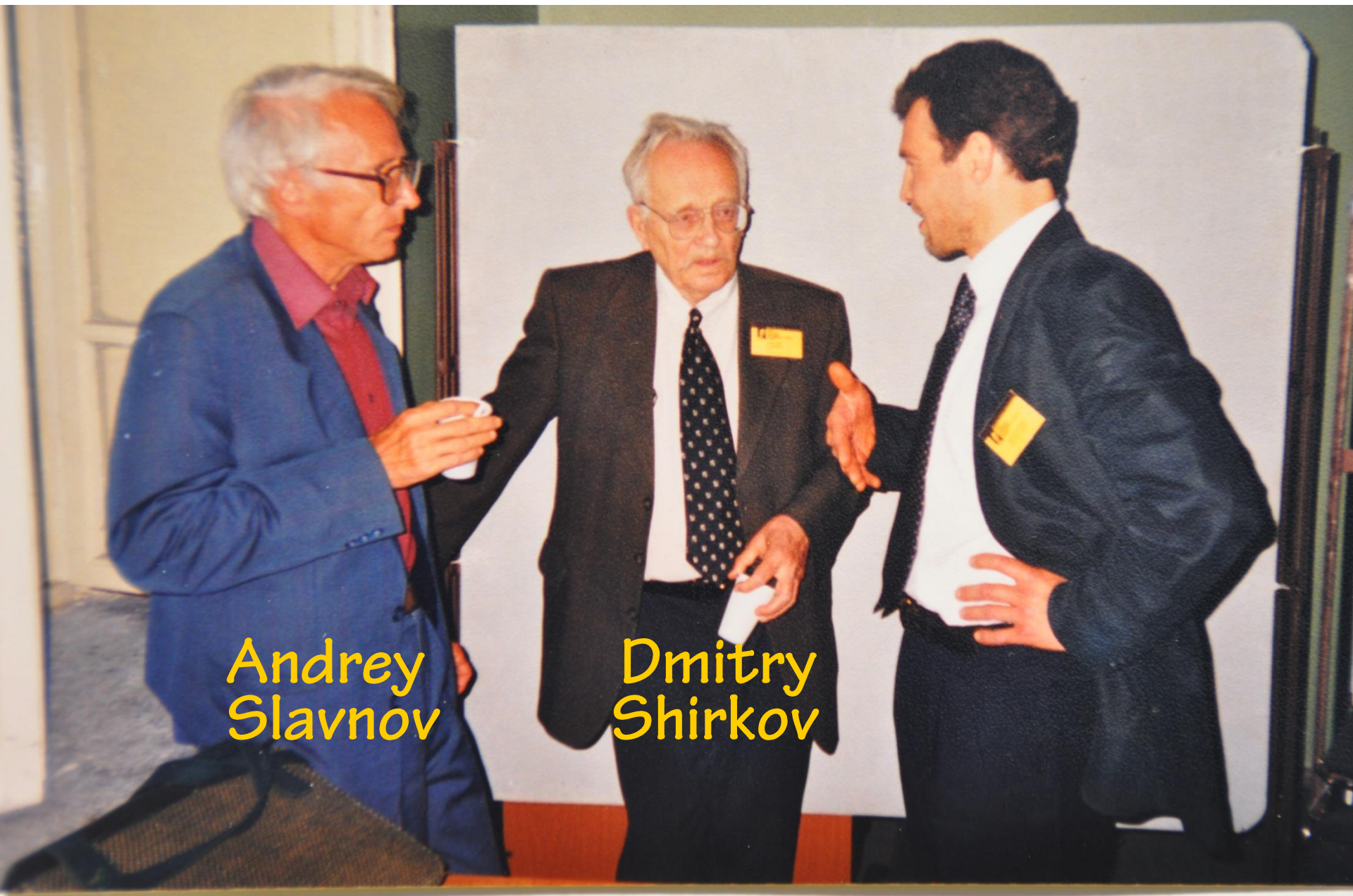
15 December 2025

Lomonosov Conferences on Elementary Particle Physics

received reasonable support inside Russia and

rising of the scientific value of the conference has
been provided by the personal participation in the
events of distinguished Russian scientists

... I would like to nominate Russian scientists who have
provided very important contribution to organization of
Lomonosov Conferences and to forming
the scientific programmes during passed 33 years



Andrey
Slavnov

Dmitry
Shirkov



Lev
Okun

18th Lomonosov Conference 2017



Valery Rubakov,
Institute for Nuclear Research of RAS

18th Lomonosov Conference 2017

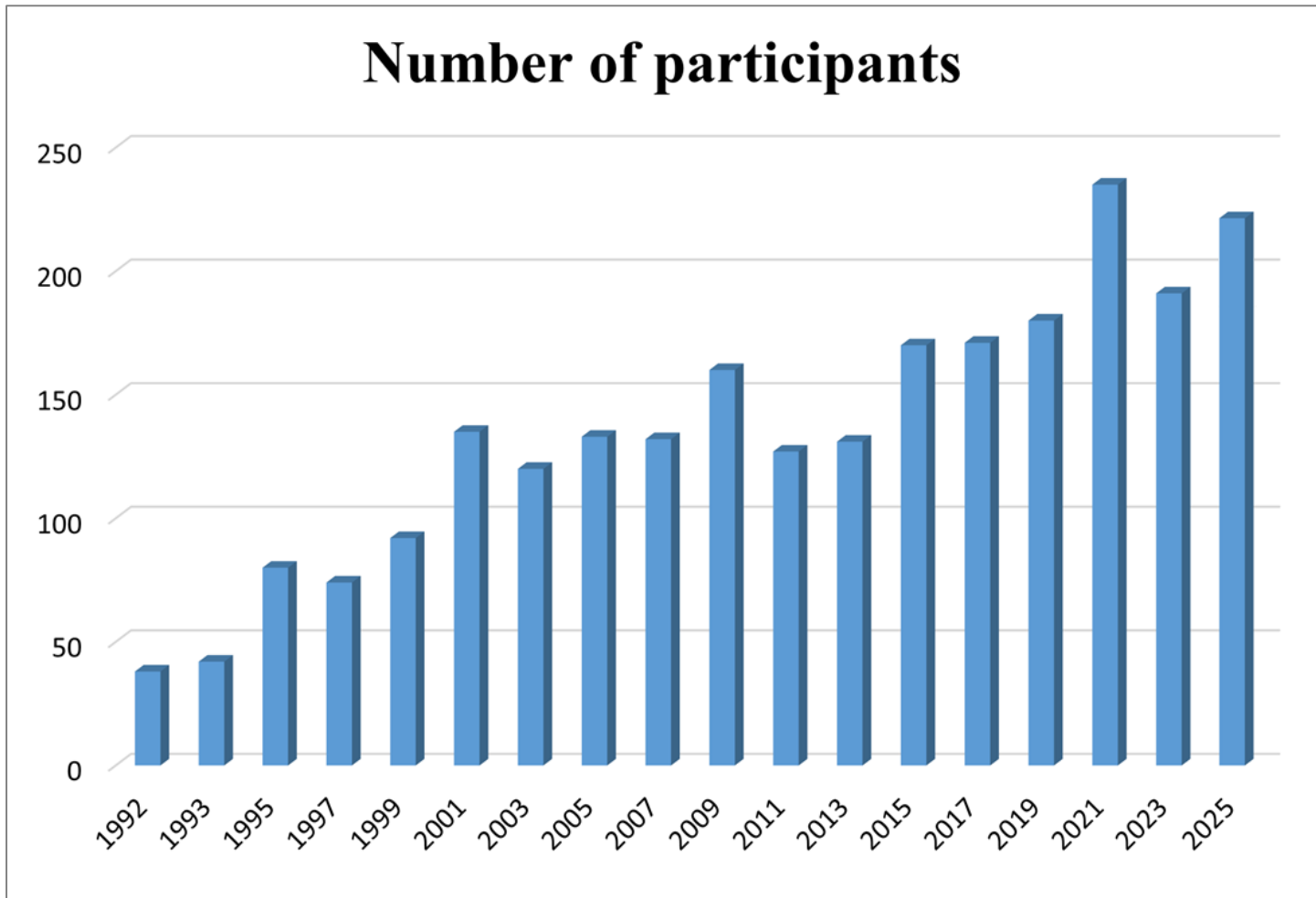


Victor Matveev,
Institute for Nuclear Research of
Joint Institute for Nuclear Research (Dubna)



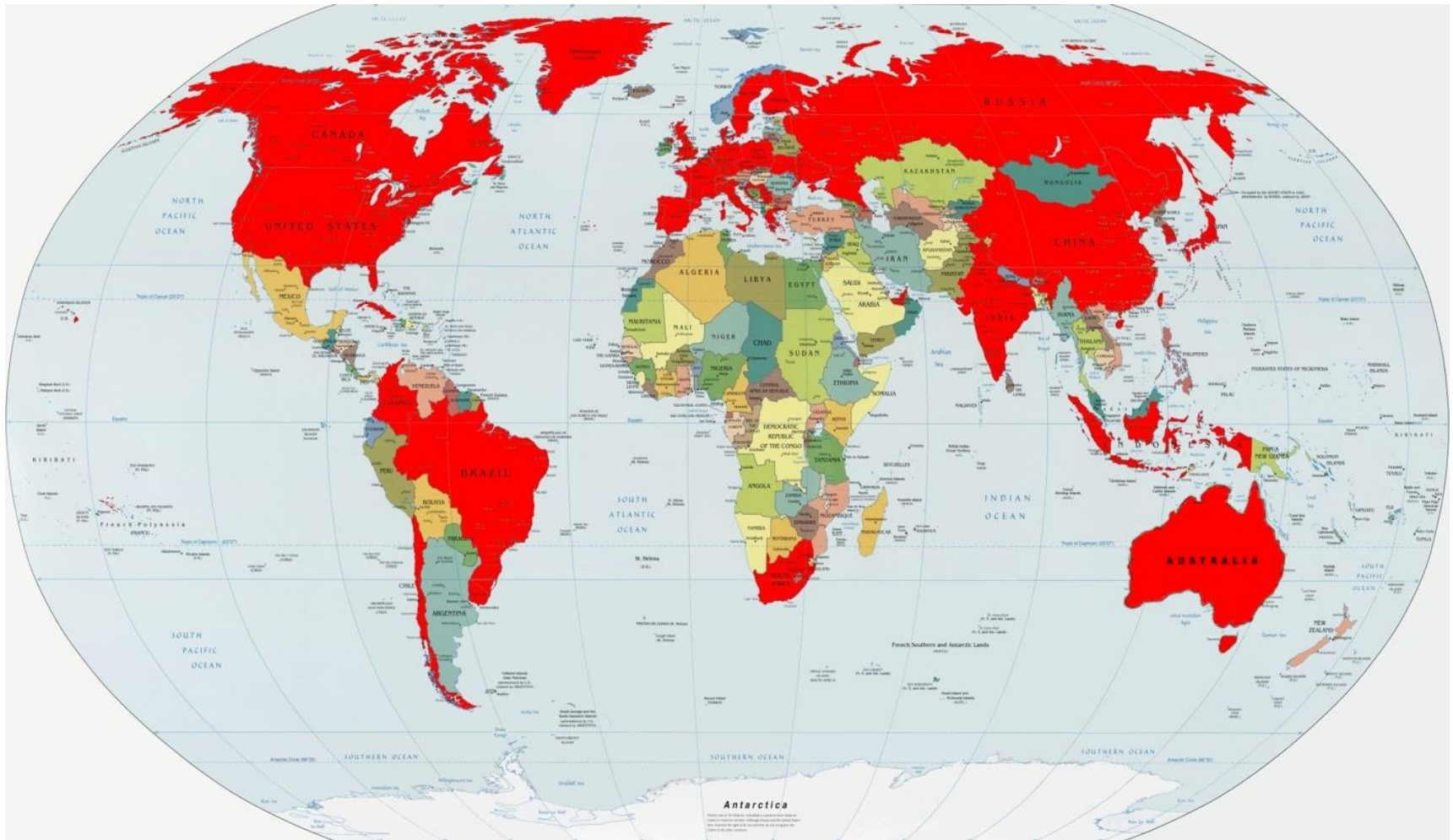
● Academician Grigory Trubnikov
Director of JINR

1992 Lomonosov Conference 2025



22nd Lomonosov Conference 2025

Map of the Lomonosov Conferences on Elementary Particle Physics



A photograph of two men, Barry Barish and Alexander Studenikin, standing in a modern, brightly lit conference hall. Barry Barish, on the left, is an older man with a white beard, wearing a dark suit, light blue shirt, and a patterned tie. Alexander Studenikin, on the right, is a younger man with grey hair, wearing a dark suit, white shirt, and a striped tie. Both are wearing blue lanyards with conference badges. In the background, other people are visible, including a man in a blue checkered shirt and white pants, and a woman in a patterned dress. The hall has large white columns and recessed lighting.

Barry Barish,
Nobel Prize 2017 winner,
participated in
17th Lomonosov Conferences

The main goals of the Lomonosov conferences are:

- to bring together scientists from different fields and to stimulate exchange of results and ideas
- maintainig collaboration between various universities and institutes
- to promote communication between young and senior scientists
- to establish relations between scientists from different countries

22nd Lomonosov Conference 2025

- The conference programme covers a broad set of items on high energy physics, astroparticle physics, cosmic rays, gravitation and cosmology

22nd Lomonosov Conference on Elementary Particle Physics

We are proud

- that many world famous scientists
and also happy
- that many young researches

from 32 countries are speakers at the
Conference

... before to start the scientific programme let me announce an
urgent request (sorry, more precisely, just a demand) to speakers
and Chairpersons

we have: • 218 presentations

- 6 working days (one free day on August 24)
- quite short time for tea breaks and lunches
- 60 remote speakers

• from +8 to -10 hours spread of time zones for different speakers

therefore we kindly ask all participants strictly follow time schedule

we recommend to reserve for discussions:

- | | | |
|-----------------------|---|-------|
| • 25 min presentation |  | 5 min |
| • 20 min presentation |  | 4 min |
| • 15 min presentation |  | 3 min |
| • 10 min presentation |  | 2 min |

22nd Lomonosov Conference

Social programme

- August 21

Reception banquet held on board of a ship that will stream along the river across the central part of Moscow (conference buses to the ship will depart from the entrance of Faculty of Physics at 17.30 pm)

- August 24

Bus excursion tour to Sergiev Posad (75 km away from Moscow, visit to the Saint Serge Abbey, historical and icon museums, lunch will be served at the Russian Orthodox Academy (conference buses will depart from the conference hotel at 9.00 am)

- August 27

Closing fourchette at Organizing Committee hall (Faculty of Physics) at 18.00 pm



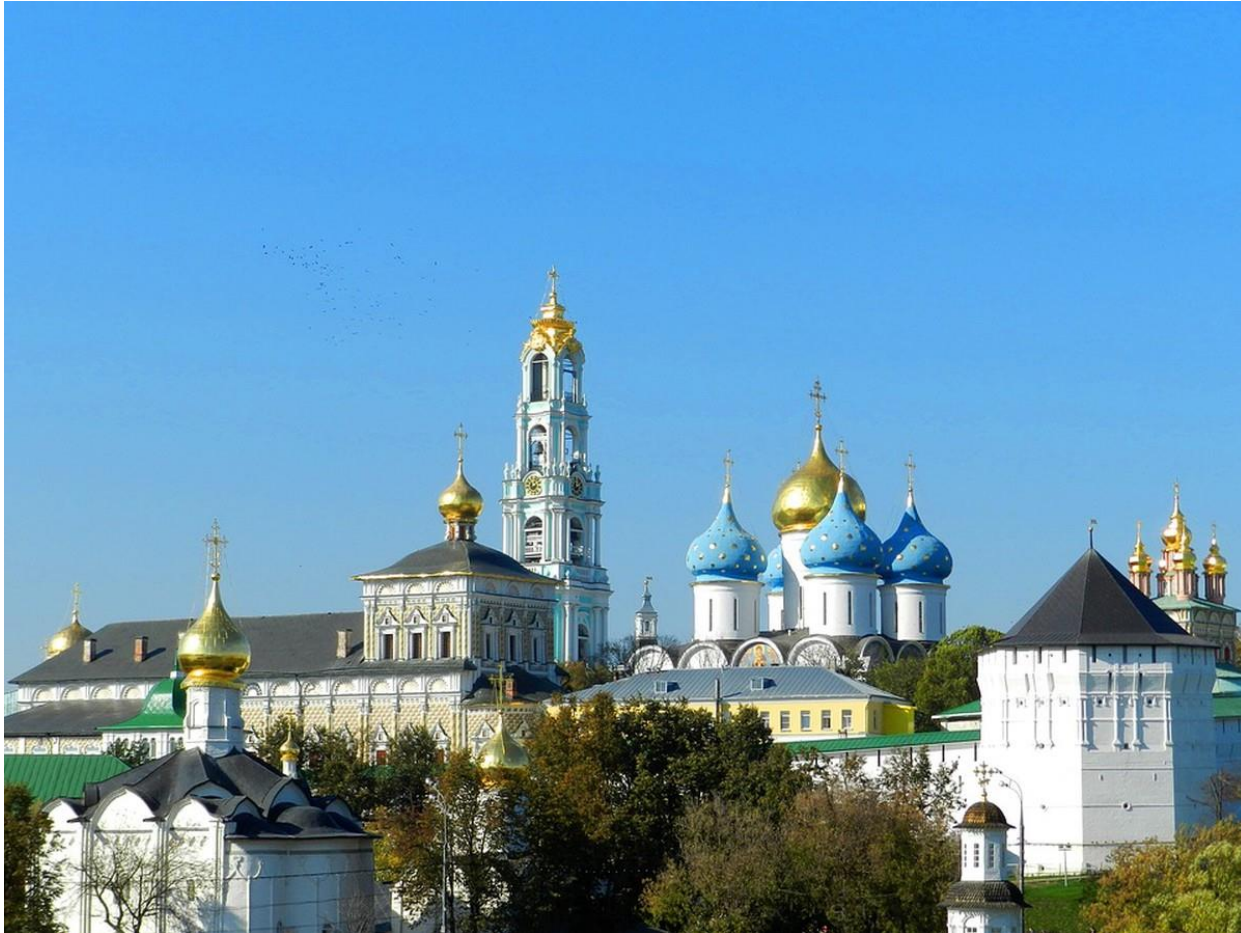
the ship "Emperor"

XXII
Lomonosov
Conference
dinner

boat
trip on

August 21
2025

- conference buses to the boat from the Physics Faculty entrance at 17.30 pm



August 24

Bus excursion tour to
Sergiev Posad

75 km away from Moscow

visit to Saint Serge Abbey,

historical and
icon museums,

lunch will be served at

Russian Orthodox Academy

... conference buses will depart from the

Conference Hotel at 9.00 am

- ... it is possible to sign up on the ship (on August 21)
at the Organizing Committee during
the coffee break
(for those who don't have coupons yet)
- ... same is for the banquet for the bus tour
to Sergiev Posad (on August 24)
(for those who don't have coupons yet)

Dedicated to the 270th Anniversary of
Moscow State University

TWENTY-SECOND LOMONOSOV



Mikhail Lomonosov
1711-1765

CONFERENCE ON ELEMENTARY PARTICLE PHYSICS

Moscow, August 21 - 27, 2025

Tests of Standard Model & Beyond
Theories Beyond Standard Model
Neutrino Physics
Astroparticle Physics
Electroweak Theory
Gravitation and Cosmology
Developments in QCD
Heavy Quark Physics
Physics at Future Accelerators

XVII International
School on Neutrino
Physics and Astrophysics

August 22 - 25, 2025

Under the patronage of

V. Sadovnichy

Rector of MSU

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K. Stankevich (MSU)
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M. Vyalkov (NCPM & MSU branch in Sarov)
E. Yakushev (JINR)
A. Yukhimchuk (VNIIEF & NCPM, Sarov)

Organizers and sponsors

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Skobeltsyn Institute of Nuclear Physics, MSU
Bruno Pontecorvo Laboratory on Neutrino Physics and
Astrophysics, MSU

INTERREGIONAL CENTRE FOR ADVANCED STUDIES

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... let me wish an interesting Lomonosov Conference

Programme of the 22nd Lomonosov Conference on Elementary Particle Physics
(duration of 25 /20-15/ minutes talks includes 5 /3/ minutes for discussion)
(remote talks are highlighted in blue)

21 August, Thursday

08.00 – 09.00 **Registration** (Hall in front of Central Physics Auditorium, Faculty of Physics, Moscow State Univ.)

09.00 – 09.30 **Opening** (Conference Hall)

Vladimir Belokurov, Dean of Faculty of Physics of MSU

Andrey Fedyanin, Vice Rector of Moscow State University
Grigory Trubnikov, Director of Joint Institute for Nuclear Research
Alexander Panin, Vice Director of Institute of Nuclear Research
Arkady Yukhimchuk, Russian Federal Nuclear Centre
& National Centre for Physics and Mathematics
Welcome on behalf of Ministry of Science and Higher Education of Russia

Chair: Alexander Studenikin, Chairman of Organizing Committee, MSU

09.30 – 13.20 **MORNING SESSION** (Conference Hall)

09.30 **I. Logashenko** (Budker Inst. of Nucl. Phys.) Anomalous magnetic moment of muon (25 min)
09.55 **B. Shwartz** (Budker Inst. of Nucl. Phys.) Muon ($g - 2$)/EDM experiment at J-PARC (25 min)
10.20 **I. Bozovic Jelisavcic** (VINCA Inst. of Nucl. Sciences, Univ. of Belgrade) A linear collider
vision (for the future of Particle Physics) (25 min)
10.45 **F.-K. Guo** (Inst. of Theor. Phys., CAS) Near-threshold hadrons with heavy quarks (25 min)

11.10 – 11.40 Tea break

11.40 **V. Riabov** (NRC «Kurchatov Inst.» - PNPI) Status and perspectives of the MPD at NICA (25')
12.05 **J. Gao** (IHEP, CAS) CEPC project status (25 min)
12.30 **G. S. Huang** (Univ. of Science and Technology of China) Overview of BESIII physics (25')
12.55 **Zh. Cao** (IHEP, CAS) Precision measurement of the spectra of cosmic ray individual species
in PeV range (25 min)

13.20 – 15.00 Lunch

15.00 – 17.30 **AFTERNOON SESSION** (Conference Hall)

15.00 **C. Giunti** (INFN, Turin) The Gallium Anomaly (25 min)
15.25 **Yu. Kudenko** (INR RAS) Physics with accelerator neutrinos (25 min)
15.50 **H. Duyang** (Shandong Univ.) Status and perspectives of the JUNO experiment (25 min)
16.15 **Y. Farzan** (Inst. for research in fundamental sciences) Searching for axial neutral current
non-standard interactions of neutrinos by DUNE-like experiments (25 min)
16.40 **M. Giammarchi** (INFN, Milan) Antimatter gravitation and fundamental laws (25 min)

17.30 – 23.30 **SPECIAL SESSION** (40')
Reception banquet will be held on board of a ship that will stream along the river across the central
part of Moscow; the conference buses to the ship will depart from the entrance of the Faculty of
Physics at 17.30