

EDITORIAL FOREWORD

“New Trends in High-Energy Physics” is a series of scientific conferences initiated by the Bogolyubov Institute for Theoretical Physics of the National Academy of Sciences of Ukraine in 1992. The conferences are devoted to topical problems in experimental and theoretical physics, nuclear and particle physics, astrophysics, high-energy physics, and physics beyond the Standard Model.

The first conference of this series was held in 1992 in Kyiv under the title *HADRONS*, and later, starting in 2000, the series acquired its present name. In subsequent years, the conference was organized annually or biennially. For many years, the meetings were held in Ukraine (at the Crimean resorts of Alushta, Yalta, and Novyi Svit, and later in Odesa and Kyiv), as well as abroad (in Montenegro, Romania, and Georgia). A distinctive feature of the conference is its relatively small number of participants (no more than one hundred). The creative and friendly atmosphere of the meetings fosters intensive collaboration and the development of new ideas, which has resulted in a number of original publications.

This volume contains contributions presented at the conference *New Trends in High-Energy Physics 2025*, which took place on September 15–19, 2025, in Batumi (Georgia) and was hosted by Batumi Shota Rustaveli State University. Approximately forty-five scientists from sixteen countries in Europe, Asia, and North America participated in the conference. Forty-two plenary and session talks were delivered, including several online presentations. The scientific program covered a broad range of topics, including hadron structure and QCD, collider experiment physics, neutrino physics and astrophysics, gravitational waves and cosmology, high-energy physics and physics beyond the Standard Model, as well as interdisciplinary and applied research.

The 2025 conference was dedicated to the memory of Professor László Jenkovszky (1942–2025), the founder and driving force of this conference series. For many decades, he shaped its scientific profile, supported young researchers, and consistently developed international connections within the Ukrainian scientific community.



Participants of the *New Trends in High-Energy Physics* Conference (Batumi, Georgia, September 15–19, 2025)

We express our sincere gratitude to the local organizing committee of the conference at Batumi Shota Rustaveli State University, especially to Professor Nugzar Gomidze, Head of the Department of Physics.

Below is a selected list of references to earlier proceedings:

1. *Hadrons – 92. Proceedings of the workshop on elastic and diffractive scattering*. Edited by L. Jenkovszky, E. Martynov (Kyiv, 1992).
2. *Hadrons – 93. Proceedings of the workshop on soft physics. Noviy Svit, Crimea*. Edited by G. Bugrij, L. Jenkovszky, E. Martynov (Kyiv, 1993).
3. *Hadrons – 94. Proceedings of the workshop on soft physics, Uzhgorod, Ukraine, 1994*. Edited by G. Bugrij, L. Jenkovszky, E. Martynov (Kyiv, 1994).
4. *Hadrons – 95. Diffraction. Proceedings of the XI-th workshop on soft physics, Noviy Svit, Crimea*. Edited by G. Bugrij, L. Jenkovszky (Kyiv, 1995).
5. *Hadrons – 96: Confinement. Proceeding of the XII-th workshop on soft physics, Noviy Svit, Crimea*. Edited by G. Bugrij, L. Jenkovszky, E. Martynov (Kyiv, 1996).
6. *Hadrons – 98. Proceedings of the 14-th International Conference on Strong Interactions at High Energies, Parthenit, Crimea, 1998* (Kyiv, 1998).
7. *New Trends in High-Energy Physics, Yalta (Crimea), 2000*. Edited by P.N. Bogolyubov, L.L. Jenkovszky (Kyiv, 2000).
8. *New Trends in High-Energy Physics, Yalta (Crimea), 2001*. Edited by P.N. Bogolyubov, G.V. Bugrij, L.L. Jenkovszky (Kyiv, 2001).
9. *New Trends in High-Energy Physics, Alushta (Crimea), 2003*. Edited by P.N. Bogolyubov, L.L. Jenkovszky, V.M. Magas. *Ukr. J. Phys.* **11–12**, 1122 (2003).
10. *Diffraction 2002*. Edited by R. Fiore, L.L. Jenkovszky, M.I. Kotsky, V.K. Magas, A. Papa (Kluwer Academic Publisher, in cooperation with NATO Sc. Affairs Division, 2003).
11. *New Trends in High-Energy Physics, Yalta (Crimea), 2000*. Edited by P.N. Bogolyubov, P.O. Fedosenko, L.L. Jenkovszky, Yu.A. Karpenko (Kyiv, 2005).
12. *New Trends in High-Energy Physics, Yalta (Crimea), 2000*. Edited by P.N. Bogolyubov, L.L. Jenkovszky, V.K. Magas, Z.I. Vakhnenko (Kyiv, 2006).
13. *New Trends in High-Energy Physics, Yalta (Crimea), 2007*. Edited by N.N. Bogolyubov, L.L. Jenkovszky, V.K. Magas (Kyiv, 2007).
14. *New Trends in High-Energy Physics, Alushta (Crimea), 2011*. Edited by P.N. Bogolyubov, L.L. Jenkovszky (Kyiv, 2011).
15. *New Trends in High-Energy Physics, Alushta (Crimea), 2013*. Edited by L. Jenkovszky, D. Savchenko, G. Stelmakh (Kyiv, 2013).
16. *New Trends in High-Energy Physics, Bečici (Montenegro), 2018* (Dubna, 2019).
17. *New Trends in High-Energy Physics, Odessa, 2019*. Edited by L. Jenkovszky, R. Schicker. *Ukr. J. Phys.* **64**, 541 (2019).
18. *New Trends in High-Energy and Low-x Physics, Sfântu Gheorghe (Romania), 2024*. Edited by L.L. Jenkovszky (Kyiv, 2024). *Ukr. J. Phys.* **69**, 786 (2024).