

National Academy of Sciences of Ukraine
Bogolyubov Institute for Theoretical Physics

Bogolyubov Kyiv Conference

Problems of Theoretical and Mathematical Physics
dedicated to the 60th anniversary of the Bogolyubov Institute for Theoretical Physics
of the National Academy of Sciences of Ukraine

September 22-24, 2026
Kyiv, Ukraine

Program

Kyiv 2026

Tuesday, September 22

09-00 **Registration**

10-00 **Conference opening**
40 min *President of the NAS of Ukraine* **Anatoly Zagorodny**
 Director of the BITP **Sergiy Perepelytsya**

Morning Session

10-40 *Ceremony of awarding of the Diploma of*
 Doctor of Honoris Causa, Inauguration lecture
 Sergii Fomin
40 min “Nuclear deflagration phenomenon and prospective concept of safe
 fast breeder reactor”
 Akhiezer Institute for Theoretical Physics NSC KIPT, Kharkiv

11-20 **Erik Aurell**
30 min “Quasi-Linkage Equilibrium in spatially separated populations and in
 diploid genetics”
 KTH-Royal Institute of Technology, AlbaNova University Center,
 Stockholm, Sweden

11-50 **Maxym Dudka, Dmytro Shapoval, Yuriy Holovatch**
20 min “Criticality of structurally-disordered spin systems with weak long-
 range interactions”
 Yukhnovskii Institute for Condensed Matter Physics, Lviv

12-10 **COFFEE BREAK**

12-30 **Larissa Brizhik**
20 min “Stabilizing role of the dissipation effects in the dynamics of
 electrosolitons in magnetic field”
 Bogolyubov Institute for Theoretical Physics

12-50 **Myroslav Holovko**
30 min “Associative approach in soft matter theory”
 Yukhnovskii Institute for Condensed Matter Physics, Lviv

13-20 **Leonid Bulavin, Eugene Rudnikov, Kostyantyn Cherevko,
Alexander Chalyi**
20 min “Whether the Hypothesis of Conformal Invariance Is Fulfilled Near the
Critical Points of Fluids?”
Bogomolets National Medical University, Kyiv

13-40 ***LUNCH***

Afternoon Session

14-30 **Jorge Kurchan**
30 min “Liquid theory of spherical and unitary designs”
École Normale Supérieure de Paris, France

15-00 **Yurij Holovatch, Taras Holovatch, Yuri Kozitsky,
Krzysztof Pilorz**
20 min “Staggering domino-like blast front motion in a one-dimensional cold gas”
Yukhnovskii Institute for Condensed Matter Physics, Lviv

15-20 **Khrystyna Gnatenko**
20 min “Entanglement in parameterized quantum circuits and its quantification
on quantum computers”
Ivan Franko National University of Lviv

15-40 **Poster Session with COFFEE**

17-40 ***CONFERENCE DINNER***

Wednesday, September 23

Morning Session

10-00 **Mark Gorenstein**
30 min “Baryon fluctuation signatures of the onset of deconfinement”
Bogolyubov Institute for Theoretical Physics

10-30 20 min	Musfer Adzhymambetov “Equation of State of Strongly Interacting Matter from Physics-Informed Neural Networks” <i>Bogolyubov Institute for Theoretical Physics</i>
10-50 20 min	Sergiy Akkelin “Particle multiplicity fluctuations of quantum origin and high-multiplicity pp collision events” <i>Bogolyubov Institute for Theoretical Physics</i>
11-10 20 min	Alexander Magner “Macroscopic rotational constraints on the neutron-star radius” <i>Institute for Nuclear Research, Kyiv</i>
11-30	COFFEE BREAK
12-00 30 min	Ubirajara van Kolck “Strong interactions from scattering to matter: ^4He atoms and nucleons” <i>European Center for Theoretical Studies in Nuclear Physics and Related Areas, Trento, Italy</i>
12-30 20 min	<u>Viktor Vasilevsky</u>, Sabina Amangeldinova, Nursultan Kalzhigitov “The quest for the Hoyle-analog states in light hypernuclei” <i>Bogolyubov Institute for Theoretical Physics</i>
12-50 20 min	<u>Volodymyr Shapoval</u>, Pritam Chakraborty, Georgy Kornakov, Adam Kisiel, Yurii Sinyukov “Non-identical particle femtoscopy as a probe of the heavy-ion collision dynamics” <i>Bogolyubov Institute for Theoretical Physics</i>
13-10 20 min	<u>Ari Paavo Seitsonen</u>, Michele Lazzeri “The mobility of a mono-vacancy in 2D graphene studied with molecular dynamics” <i>École Normale Supérieure, Paris, France</i>
13-30	LUNCH

Afternoon Session

14-30 30 min	Yuriy Slyusarenko “M.M. Bogolyubov and theoretical physics in Kharkiv” <i>O.I. Akhiezer Institute for Theoretical Physics, NSC KIPT</i> <i>V.N. Karazin Kharkiv National University</i>
15-00 30 min	Carlo Baccigalupi “Cosmology Probes for Fundamental Physics” <i>International School for Advanced Studies, Trieste, Italy</i>
15-30 20 min	<u>Oleksandr Khasai</u>, Oleg Ruchayskyi, Denys Malyshev, Lidiia Zadorozhna “Ensemble-Averaged Axion–Photon Conversion in Turbulent Galaxy Clusters” <i>Bogolyubov Institute for Theoretical Physics</i>
15-50 20 min	<u>Vsevolod Skorobohatov</u>, Sergii Trofymenko “Coherent effects in atomic K-shell ionization and characteristic X-ray emission by ultrashort high-energy electron bunches” <i>National Science Center Kharkiv Institute of Physics and Technology</i>
16-10	COFFEE BREAK
16-40 20 min	Hartmut Abele, <u>Stepan Moskaliuk</u> “Seeing Effective Field Theory of Neutron Decay through of Double Categories” <i>Bogolyubov Institute for Theoretical Physics</i>
17-00 20 min	Leonid Christophorov “Resetting search for multiple targets” <i>Bogolyubov Institute for Theoretical Physics</i>
17-20 20 min	<u>Serhii Tunyk</u>, Elmar Petrov “Magnons as uncharged carriers for quantum communication between nanomagnets” <i>Bogolyubov Institute for Theoretical Physics</i>
17-40 20 min	Oleg Gerasymov “Physical modeling of macroscopic properties of the complex many-

18-00 20 min	Vasyl Maslov, Ilia Demydenko, Danylo Maslo, Sergej Melnik “Modern Trends in Plasma Wakefield Acceleration” <i>Max Planck Institute of Microstructure Physics, Halle (Saale), Germany</i>
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18-20	<i>EXCURSION TO FEOFANIA PARK</i>
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Thursday, September 24

Morning Session

10-00 30 min	<u>Johannes Bluemlein</u>, Alexandre Gavrilik, Ostap Mykhailiv, Carsten Schneider “q and mu extensions of special function in quantum field theory” <i>Deutsches Elektronen-Synchrotron (DESY), Germany</i>
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10-30 20 min	Viktor Gerasimenko “Propagation of correlations in quantum systems of many particles and kinetic equations” <i>Institute of Mathematics</i>
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10-50 20 min	Alexandre Gavrilik, Andrii Nazarenko, <u>Yuliia Lunha</u> “The uses of the SO(5)/SO(2) Stiefel sigma model for the unified Zhang’s model” <i>Bogolyubov Institute for Theoretical Physics</i>
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11-10 20 min	Oleksandr Vidybida “The exact expression for increasing selectivity through statistical fluctuations in a system with a threshold” <i>Bogolyubov Institute for Theoretical Physics</i>
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11-30	<i>COFFEE BREAK</i>
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12-00 20 min	<u>Nikolai Iorgov</u>, Kohei Iwaki, Oleg Lisovyy, Yurii Zhuravlov “Irregular conformal field theory and Painlevé equations” <i>Bogolyubov Institute for Theoretical Physics</i>
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12-20 20 min	<u>Yurii Zhuravlov, Nikolai Iorgov</u> “Long-time asymptotic series for the Painleve II equation: Riemann Hilbert approach” <i>Bogolyubov Institute for Theoretical Physics</i>
12-40 20 min	Oleksiy Vakhnenko “Canonization-based symmetry breaking in an integrable four-component nonlinear dynamical system on a quasi-one-dimensional lattice with background-controlled intersite coupling” <i>Bogolyubov Institute for Theoretical Physics</i>
13-00	<i>LUNCH</i>
14-00 20 min	Alexander Zolotaryuk “Resonant tunneling through one-point singular potentials” <i>Bogolyubov Institute for Theoretical Physics</i>
14-20 20 min	<u>Roman Ovsianikov, Andrii Sotnikov, Kurt Jacobs, Denys Bondar</u> “Low-Rank Split-Operator Propagation for Structured Open Quantum Systems” <i>NSC «Kharkiv Institute of Physics and Technology»</i>
14-40 20 min	Yan Rybalko “Generic regularity of the two-component Novikov equation” <i>University of Oslo, Norway</i> <i>B.Verkin Institute for Low Temperature Physics and Engineering</i>
15-00	<i>COFFEE BREAK</i>
15-30 30 min	<u>Anna Morozovska, Eugene Eliseev, Akash Saha, Venkatraman Gopalan</u> “Manifestation of bilinear flexo-antiferrodistortive coupling at twins and antiphase boundaries in ferroelastics” <i>Institute of Physics</i>
16-00 20 min	Sergei Sharapov “Competing orders in rhombohedral N-layer graphene” <i>Bogolyubov Institute for Theoretical Physics</i>

16-20 20 min	<u>Alexander Eremko</u>, Larissa Brizhik, Vadym Loktev “Spectrum of electron states in a charged atomic chain within the Dirac description” <i>Bogolyubov Institute for Theoretical Physics</i>
16-40 20 min	Maksim Tomchenko “Is the superfluidity of a Bose gas related to the spontaneous breaking of U(1) symmetry?” <i>Bogolyubov Institute for Theoretical Physics</i>
17-00 20 min	<u>Yuliia Gusieva</u>, Volodymyr Kravchuk, Kostiantyn Yershov “Field-controlled thermal spin transport in rutile-type altermagnets” <i>G.V. Kurdyumov Institute for Metal Physics</i>
17-20 20 min	Dmytro Kadygrob “Quantum-Mechanical Analysis of Electron Transport in a Cylindrical Crossed-Field Configuration with a Periodic Boundary Potential” <i>O. Ya. Usikov Institute for Radio Physics and Electronics</i>
17-40	<i>Closing of the conference</i>

Poster Session

22 September

ASTROPHYSICS AND COSMOLOGY

1. **Andriy Nazarenko** “Axion-Like Dark Matter Feedback from Subgalactic Baryon Redistribution”, *Bogolyubov Institute for Theoretical Physics*

STATISTICAL PHYSICS AND SOFT MATTER

2. **Oleksiy Kapitanchuk, Viktor Teslenko** “Sufficient and necessary conditions of entropy driven framework for hot unfolding of RNA thermometers”, *Bogolyubov Institute for Theoretical Physics*
3. **Oleg Usatenko** “Ising-Markov chains equivalence as an inverse problem of statistical physics”, *A.Ya. Usikov Institute for Radiophysics and Electronics*
4. **Volodymyr Ognivenko** “The friction in a system of relativistic charged particles”, *National Science Center Kharkiv Institute of Physics and Technology Ukrainian Academy of Science*

5. **Oleksandr Cherniak** “Longitudinal motion effects on transverse particle transport by random field”, *Bogolyubov Institute for Theoretical Physics*
6. **Constantin Usenko** “Quanta Measurements are Indirect only”, *Bogolyubov Institute for Theoretical Physics*
7. **Constantin Usenko** “Pragmatic View on the Measurement of Quanta”, *Bogolyubov Institute for Theoretical Physics*

HIGH ENERGY PHYSICS AND NUCLEAR MATTER

8. **Tetiana Obikhod** “Geometric Singularities, Moduli Stabilization, and Gravitational Wave Signatures in String Compactifications” *Institute for Nuclear Research NAS of Ukraine*
9. **Yaroslav Kryvenko-Emetov** “Longitudinal-momentum and coulomb effects in inclusive deuteron breakup on hydrogen and carbon”, *National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" & Institute for Nuclear Research*
10. **Artemiy Lysenko** “Hadronic and partonic composition of QCD matter across the crossover”, *Bogolyubov Institute for Theoretical Physics*
11. **Viktor Zhaba, Viktor Vasilevsky, Yuliia Lashko** “Theoretical analysis of astrophysical S-factors of nuclear reactions ${}^7\text{Be}(n,\alpha){}^4\text{He}$ and ${}^7\text{Be}(n,p){}^7\text{Li}$ ”, *Bogolyubov Institute for Theoretical Physics*
12. **Dmytro Anchyskin, Volodymyr Gnatovskyy, Denys Zhuravel, Vladyslav Karpenko** “Interacting Relativistic Bosons at Finite Temperatures: Comparison with Lattice QCD”, *Bogolyubov Institute for Theoretical Physics*

CONDENSED MATTER PHYSICS

13. **Eugene Eliseev, Anna Morozovska, Yujie Zhu, Mykola Yelisieiev, Yulian Vysochanskii, Venkatraman Gopalan, Long-Qing Chen, Jia-Mian Hu** “Strain Engineering of Flexo-Phonons and Flexo-Ferrons in Thin Films of Van der Waals Ferrielectrics”, *Frantsevich Institute for Problems in Materials Science*
14. **Oleksii Bereznykov, Anna Morozovska** “Machine learning to determine the fitting parameters of ferroelectric-dielectric nanocomposites dielectric response”, *Institute of Physics*
15. **Yevgen Osokin, Sergiy Perepelytsya** “Electronic structure and stability of complexes Ag^+ with nucleotide base pairs”, *Bogolyubov Institute for Theoretical Physics*
16. **Dmytro Piatnytskyi, Tetiana Bubon, Sergiy Perepelytsya** “Quantum-Chemical Study of the Interactions between DNA Phosphate Groups and Monovalent Ions”, *Bogolyubov Institute for Theoretical Physics*

17. **Oleksandr Cherniak, Sergiy Perepelytsya** “Charge density oscillations around the DNA double helix”, *Bogolyubov Institute for Theoretical Physics*
18. **Mariia Sosnovska, Maxim Lazarenko, Sergiyy Alekseev, Oleksandr Alekseev, Olga Vlasiuk, Anna Stetsiuk, Sergiy Perepelytsya** “Comparative Analysis of Ion-Specific Effects on the Electrophysical and Rheological Properties of DNA Aqueous Solutions with LiCl, NaCl, and KCl”, *Taras Shevchenko National University of Kyiv*
19. **Oleksandr Konstantynov** “Non-stationary longitudinal Josephson effect in bilayer systems with electron-hole pairing” *B.Verkin Institute for Low Temperature Physics and Engineering of the NAS of Ukraine*

QUANTUM MATERIALS

20. **Oksana Kremen, Igor Bychko, Tymofii Nikolaienko, Victor Lobanov, Peter Strizhak** “Quantum chemical study of methanol interaction with a pyrene-based acid”, *Chuiko Institute of Surface Chemistry of National Academy of Sciences of Ukraine*
21. **Mariia Terebinska, Olha Tkachuk, Oksana Filonenko, Andrii Datsiuk, Anatoliy Grebenyuk, Viktor Lobanov** “Effect of fluorination on the molecular electrostatic potential of itic non-fullerene acceptors”, *Chuiko Institute of Surface Chemistry of National Academy of Sciences of Ukraine*

MATHEMATICAL PHYSICS

22. **Serhii Gryshchuk, Sergiy Plaksa** “A Hypercomplex method of solving the piecewise-continuous Dirichlet problem for the Lamé system”, *Institute of Mathematics of NAS of Ukraine, Zhytomyr Military Institute named after S.P. Korolyov*
23. **Oleksii Hukalov** “The some solution of the Bryan-Pidduck equation”, *B.Verkin Institute for Low Temperature Physics and Engineering of the NAS of Ukraine*
24. **Roman Skurikhin, Sergiy Gefter, Aleksey Piven’** “Representations of solutions for a first order quasilinear equation in a form of series in powers of the copolynomial δ -function”, *V. N. Karazin Kharkiv National University*
25. **Vasyl Davydovych** “Symmetry analysis and exact solutions of a model describing viscous fingering induced by a chemical reaction”, *Institute of Mathematics, NAS of Ukraine*
26. **Yuriy Mishchenko, Alexandre Gavrilik** “Low-order momentum correlation functions of the symmetric Tamm-Dancoff q-bosons, derived via under-trace operations”, *Bogolyubov Institute for Theoretical Physics*

27. **Markiian Kachmar, Khrystyna Gnatenko** “Quantum Computing Study of the Speed of Quantum Evolution in the Ising Model in a Longitudinal Magnetic Field”, *Ivan Franko National University of Lviv*