

Bogolyubov Kyiv Conference "Problems of Theoretical and Mathematical Physics"

Tuesday 24 September 2024 - Thursday 26 September 2024

Bogolyubov Institute for Theoretical Physics (Section 1-4), Institute of Mathematics (Section 5)

Scientific Programme

Sections 1-4

Tuesday, September 24

09-00 Registration

10-00 *Conference opening*

20 min Academician of the NAS of Ukraine Anatoly Zagorodny

Morning Session

10-20 Mark Gorenstein

30+10 min "Critical point in system of interacting bosons"

Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine

11-00 Yuriy Holovatch

30+10 min "Reading Ernst Ising's dissertation hundred years on"

Institute for Condensed Matter Physics of the NAS of Ukraine, Lviv

11-40 Khrystyna Gnatenko

20 min "Properties of multi-qubit states representing directed graphs and their studies with quantum programming"

Ivan Franko National University of Lviv

12-00 **COFFEE BREAK**

12-30 Larissa Brizhik

20 min "To 190 years of the Wave of Translation and 50 years of the Davydov's soliton: Soliton dynamics in an oscillating magnetic field"

Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine

12-50 Ivan Gandzha, Yuri Sedletsky

20 min "Cubic-quintic interplay in the nonlinear Klein–Gordon model"

Institute of Physics of the NAS of Ukraine

13-10 Andriy Kuzmak

20 min "Entanglement of the diamond spin cluster"

Ivan Franko National University of Lviv

13-30 LUNCH

Afternoon Session

14-30 Olexander Chalyi, L. A. Bulavin, K. O. Chalyy
30+10 min "Methods of Neutron Optics for Studying Physical Properties of Liquids"

O.O. Bogomolets National Medical University, Kyiv

15-10 Sergiy Perepelytsya
20 min "Effects of metallic and molecular counterions in structural dynamics of the DNA double helix"

Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine

15-30 Viktor Pergamenshchik
20 min "General hydrodynamic approach for a cold Bose gas"

Institute of Physics, NANU, Kyiv & Center for Theoretical Physics, PAN, Warsaw, Poland

15-50 COFFEE BREAK

16-10 Posters Presentation

18-00 Posters Discussion

18-30 CONFERENCE DINNER

Wednesday, September 25

Morning Session

10-00 Taras Bryk
30+10 min "On a crossover between two mechanisms of sound propagation in liquids"

Institute for Condensed Matter Physics of the NAS of Ukraine, Lviv

10-40 Volodymyr Kryvoruchko, Andrey Savchenko
30+10 min "Quantum topological effects in magnetization dynamics: the Berry phase, the Aharonov–Casher effect and electric field control of spin waves dynamics"

Donetsk Physics & Technology Institute named after O. O. Galkin, NAS of Ukraine

11-20 Dmytro Shapoval, Maxym Dudka, Yuriy Holovatch
20 min "Critical Behavior of Structurally Disordered Systems Magnets with Long-Range Interaction"

Institute for Condensed Matter Physics of the NAS of Ukraine, Lviv

11-40 Taras Hutak
20 min "Thermodynamics of the kagome Heisenberg antiferromagnets"

Institute for Condensed Matter Physics of the NAS of Ukraine, Lviv

12-00 COFFEE BREAK

12-30 Roman Ovsiannikov, Kurt Jacobs, Denys Bondar, Andrii Sotnikov
20 min "Squeezing and amplification in open quantum systems with color centers using the multilevel Janes-Cummings model"
National Science Center "Kharkiv Institute of Physics and Technology

12-50 Yevhenii Trotskyi, Eugen Syrkin, Viktor Lykah
20 min "Domains and domain boundaries structure of benzene adsorbed on graphene"
B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

13-10 Oleh Ivakhnenko, Olexandr Todrin, Sergey Shevchenko
20 min "Modeling temperature dynamics in non-uniform biological tissues under cryogenic impact"
B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv

13-30 LUNCH

Afternoon Session

14-30 Yurii Slyusarenko, Mykyta Bulakhov, Oleksandr Peletminskyi
30+10 min "Effect of the photon subsystem on the magnetic properties of quantum gases in equilibrium with radiation"
National Science Center "Kharkiv Institute of Physics and Technology"

15-10 Leonid Christophorov
20 min "Resetting random walks in a bounded chain"
Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine

15-30 Oleksandr Borysenko, Mykhailo Bratchenko, Alessandro Lomi, Ihor Omelchenko, Andrii Sotnikov
20 min "Application of Langevin dynamics for optimization in machine learning tasks"
National Science Center "Kharkiv Institute of Physics and Technology"

15-50 COFFEE BREAK

16-20 Dmytro Anchyshkin
20 min "Four types of phase transitions in interacting boson system at high temperatures"
Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine

16-40 Artemiy Lysenko
20 min "Chemical freeze-out curve in heavy-ion collisions and the QCD critical point"
Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine

17-00 EXCURSION TO FEOFANIA PARK

Thursday, September 26

Morning Session

10-00 Eugene Eliseev, Anna Morozovska
20 min "Analytical Description of Size Effects, Strains and Ferro-ionic Coupling in Si-Compatible Nanosized Ferroelectrics"
Institute of Physics of the NAS of Ukraine

10-20 Andrii Fesh, Yuri Shtanov, Sergei Sharapov
20 min "Sagnac effect in solids"
Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine

10-40 Daryna Bukatova, Oleksii Yanchyshen, Yaroslav Zolotaryuk
20 min "Impurity-induced localized modes in parallel Josephson junction arrays"
Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine

11-00 Tatiana Shatnii, Evgen Len, Tatiana Len
20 min "Recursive Method for Calculating T-Matrix of Electron Scattering on Arbitrary Many-Particle Clusters in Strongly Correlated Systems"
G. V. Kurdyumov Institute for Metal Physics

11-20 Oleksandr Vidybida
20 min "Stimulating excitable membrane of ORN with stochastic Markov process"
Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine

11-40 Oleksiy Vakhnenko
20 min "Development and analysis of novel integrable nonlinear dynamical systems on quasi-one-dimensional lattices. Parametrically driven nonlinear system of pseudo-excitations on a two-leg ladder lattice"
Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine

12-00 COFFEE BREAK

12-30 Viktor Gerasimenko
20 min "Dynamics of correlations of many colliding particles"
Institute of Mathematics of the NAS of Ukraine

12-50 Oleksiy Kapitanchuk, Elmar Petrov, Yevgen Shevchenko
20 min "Kinetic model of the formation of STM-induced electrofluorochromism in molecular junctions"
Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine

13-10 Oleksandr Cherniak, Bohdan Lev
20 min "Polarization mechanism of bacteria motion in aquatic media"
Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine

13-30 **LUNCH**

14-30 Oleg Gerasymov
20 min "Towards relations between compaction and compressibility of hard sphere mixtures"
Odesa Mechnikov National University

14-50 Borys Grinyuk
20 min "Elastic form factors of light alpha-cluster nuclei"
Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine

15-10 Nursultan Kalzhigitov, Victor Vasilevsky
20 min "Pauli resonances in single- and many-channel systems"
Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine

15-30 **COFFEE BREAK**

15-50 Serhii Kukhtaruk, Viacheslav Kochelap
20 min "Initial value problem in the case of multivalued dispersion equations"
V. E. Lashkaryov Institute of Semiconductor Physics

16-10 Marina Ishchenko, Peter Berczik, Margaryta Sobolenko
20 min "Milky Way globular clusters in cosmological timescale. Probability of the interaction with the Galactic center"
Main Astronomical Observatory the NAS of Ukraine, Kyiv, Ukraine

16-30 Oleksii Yanchyshen
20 min "Orbital perturbation theory in Schwarzschild space-time"
Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine

16-50 Closing of the conference

HIGH ENERGY PHYSICS AND NUCLEAR MATTER

STATISTICAL PHYSICS AND KINETIC THEORY

ASTROPHYSICS AND COSMOLOGY

CONDENSED MATTER PHYSICS

MATHEMATICS