

X Conference of Young Scientists "Problems of Theoretical Physics"

Monday 23 December 2019 - Tuesday 24 December 2019

Bogolyubov Institute for Theoretical Physics of the National Academy of Sciences of Ukraine

Scientific Programme

National Academy of Sciences of Ukraine
Bogolyubov Institute for Theoretical Physics
Young Scientists Council

X Young Scientists Conference

Problems of Theoretical Physics

dedicated to the 110-th anniversary
of the M.M. Bogolyubov (1909-1992)

December 23-24, 2019
Kyiv, Ukraine

Preliminary Program

Kyiv 2019

Monday, December 23

8-30 Registration begins

**9-20 Conference opening
Morning Session**

9-30 V.P. Kravchuk

Lecture "Topological magnetic solitons in curvilinear nanomagnets"
Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv

10-15 A. Konstantinov, S. Shevchenko

"Thermal counterflow and electrical activity of superfluid systems in a magnetic field"
B. Verkin Institute for Low Temperature Physics and Engineering, NAS of Ukraine, Kharkiv

10-35 I.O. Starodub, Y. Zolotaryuk

"Embedded solitons in the double sine-Gordon lattice with next-neighbor interaction"
Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv

10-55 D. Kadygrob, T. Rokhmanova, S. Apostolov, V. Yampol'skii

"Localized waves and resonance effects in layered superconductors"
A.Ya. Usikov Institute for Radiophysics and Electronics, NAS of Ukraine, Kharkiv

11-15 COFFEE BREAK

11-35 D. Dobushovskyi

"X-ray photoemission spectra for the Falicov-Kimball model with correlated hopping"
Institute for Condensed Matter, NAS of Ukraine, Lviv

11-55 O. Krupnitska

"Effective description of the frustrated Heisenberg three-leg and four-leg tubes in a strong magnetic field"

Institute for Condensed Matter, NAS of Ukraine, Lviv

12-15 V. Baliha

"Quantum antiferromagnet in a magnetic field on frustrated kagome-lattice bilayer"

Institute for Condensed Matter, NAS of Ukraine, Lviv

12-35 V.O. Shubnyi, S. G. Sharapov, Y. V. Skrypnyk, V. M. Loktev

"Effect of resonant impurity scattering of carriers on Drude peak broadening in uniaxially strained graphene"

Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv

12-55 POSTERS PRESENTATION

13-30 LUNCH

Afternoon Session

14-00 A.V. Shestopalova

Lecture "Epigenetics: "read" between DNA lines"

A.Ya. Usikov Institute for Radiophysics and Electronics, NAS of Ukraine, Kharkiv

14-45 O. Zdorevskyi, D.V. Piatnytskyi, S.N. Volkov

"Competitive interaction of hydrogen peroxide and water molecules with DNA recognition sites"

Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv

15-05 T. Bubon, S. Perepelytsya

"Low-frequency vibrations of water molecules in the hydration spine of DNA minor groove"

Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv

15-25 V. Yakovliev

"Influence of the cell on cyanide destruction by bacteria in the model of respiratory mechanism"

Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv

15-45 *COFFEE BREAK

***16-05 Ya.I. Kolesnichenko, Yu.V. Yakovenko, M.H. Tyshchenko**

"Transverse energy transfer by Alfvén waves in toroidal plasmas"

Institute for Nuclear Research, NAS of Ukraine, Kyiv

16-25 O. Kryvchikov, Tomasz Zalesski

"The influence of the three-particle interaction on critical phenomena of the Bose-Hubbard Model"

B. Verkin Institute for Low Temperature Physics and Engineering, NAS of Ukraine, Kharkiv

16-45 A. Spivak, O. Gerasymov

"Towards understanding of condensed matter via study granular systems"

Odesa State Environmental University, Odesa

17-05 O. Shchur, A. Vidybida

"First passage time distribution for spiking neuron with fast inhibitory feedback stimulated with renewal stream"

Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv

17-30 WELCOME PARTY and POSTER SESSION

Tuesday, December 24**Morning Session****09-30 D. Iakubovskyi****Lecture "Hunting the dark matter origin with astrophysical and cosmological data"****Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv****10-15 D. Savchenko, D. Iakubovskyi, A. Rudakovskiy****"New mass bound on fermionic dark matter from a combined analysis of classical dSphs"****Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv****10-35 A. Rudakovskiy, D. Iakubovskyi, D. Savchenko, M. Tsizh****"Searching the warm dark matter signatures from Cosmic Dawn and Reionization epoch"****Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv****10-55 D. Dobrycheva, M. Vasylenko, V. Khramtsov, I. Vavilova****"The verification of Machine Learning methods for binary morphological classification of SDSS-galaxies"****Main Astronomical Observatory, NAS of Ukraine, Kyiv****11-15 COFFEE BREAK****11-35 V. Sagun, O. Ivanytskyi, Ilidio Lopes****"Dark-matter admixed compact stars and their properties under extreme conditions"****University of Coimbra, Portugal/ Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv****11-55 M.V. Khelashvili****"Scalar field dark matter with ϕ^6 self-interaction"****Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv****12-15 M. Tataryn, M. Stetsko****"Static and slowly rotating three-dimensional black hole in nonlinear electrodynamics"****Ivan Franko National University of Lviv****12-35 Y. Taistra, V. Pelykh****"Polarization effects of algebraically special Maxwell field in the Kerr space-time"****Pidstryhach Institute for Applied Problems of Mechanics and Mathematics, NAS of Ukraine, Lviv****12-55 LUNCH****Afternoon Session**

13-30 O. Gamayun

Lecture "Relaxation in classical integrable systems"
University of Amsterdam

14-15 O. Ivanytskyi, Maria Angeles Perez-Garcia, V. Sagun, Conrado Albertus

"Second look to the Polyakov Loop Nambu-Jona-Lasinio model at finite baryonic density"
Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv

14-35 N. Astrakhantsev, V. Braguta, N. Kolomojets, A. Kotov, A. Nikolaev

"Equation of state from lattice QCD at imaginary chemical potential and external magnetic field"
Joint Institute for Nuclear Research, Dubna, Russia

14-55 P. Minaiev, V. Skalozub

"The Electroweak phase transition and spontaneous creation of magnetic fields"
Oles Honchar Dnipro National University, Dnipro

15-15 M. Dmytriev, V. Skalozub

"Dark matter signals description in the scattering processes in the generalized Yukawa model"
Oles Honchar Dnipro National University, Dnipro

15-35 COFFEE BREAK**15-55 R. Poberezhnyuk**

"Nuclear critical point and fluctuations of conserved charges"
Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv

16-15 N. Shul'ga, V. Koriukina

"On fast charged particles scattering in thin crystalline and amorphous targets"
National Science Center Kharkov Institute of Physics and Technology,
NAS of Ukraine, Kharkiv

16-35 D. Zhuravel, O.S. Stashko, D.V. Anchishkin, I.N. Mishustin, H. Stocker

"Thermodynamic properties of an interacting boson system"
Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv

16-55 M. Gorenstein, R. Poberezhnyuk, H. Stoecker, V. Vovchenko, O. Savchuk

"Traces of the nuclear liquid-gas phase transition in the analytic properties of hot QCD"
Taras Shevchenko National University of Kyiv

17-15 Y. Bondar

"Bose gas with repulsive interactions between particles"

Taras Shevchenko National University of Kyiv

17-35 O. Panova

"Backward nucleon production by heavy baryonic resonances in proton-nucleus collisions"

Taras Shevchenko National University of Kyiv

17-55 V. Gorkavenko, P. Kashko, K. Bondarenko

"Chern-Simons portal"

Taras Shevchenko National University of Kyiv

18-15 *Closing of the conference***POSTER SESSION**

The list of posters

P1. L. Sidletska, O. Gerasymov, A. Spivak "Compressibility excess and structurization of binary granular mixture" (Odesa State Environmental University)

P2. A. Yakimenko, B. Malomed, I. Yatsuta, A. Oliinyk "Symmetry breaking in weak- and strong-coupled ring-shaped superflows of Bose-Einstein condensates" (Taras Shevchenko National University of Kyiv)

P3. I. Yatsuta, A. Yakimenko "Analogue Hawking radiation in a ring of Bose-Einstein condensate" (Taras Shevchenko National University of Kyiv)

P4. H. Shevliakova "Ferroelectric nanocomposites: influence of nanoparticle sizes distribution on pyroelectric and electrocaloric conversion parameters" (National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Kyiv)

P5. O. Chelpanova, O. Yakimenko "Spontaneous and engineered transformations of topological structures in nonlinear media with gain and loss" (Taras Shevchenko National University of Kyiv)

P6. S. Burian, O. Hreblov, O. Tyvonovych, M. Isaiev "Determination of the contact angle from transversality conditions of the Lagrange variation problem of wetting" (Taras Shevchenko National University of Kyiv)

P7. O.V. Yanchyshen "Mathieu equation as a confluent Heun equation and its applications" (Kyiv Academic University)

P8. E. Naichuk, N. Iorgov "The Aharonov-Bohm effect and conic singularities for the Dirac equation" (Taras Shevchenko National University of Kyiv)

P9. D. Savchenko, D. Malyshev "New bounds on axion-like particles from NuSTAR observations" (Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv)

P10. I. Bilinskyi, O. Zakhzhay, Peter Berczik "Modelling of Spectral Energy Distribution from Protoplanetary Disk of IRAS 22150+6109" (Taras Shevchenko National University of Kyiv)

P11. V. Chuiko, T. Nikolaienko "The covalent radii derived from the first-principle data" (Taras Shevchenko National University of Kyiv)

P12. O. Husak, T. Nikolaienko, O. Pavlenko "Binding of antibiotic drug molecules to the surface of silver nanoparticles: tight-binding DFT study" (Taras Shevchenko National University of Kyiv)

P13. K. Taradiy "DNN application for hydrodynamic task solution" (Frankfurt Institute for Advanced Studies, Frankfurt am Main, Germany)

P14. O.M. Cherniak "Effects of parallel motion on test-particle transport" (Bogolyubov Institute for Theoretical Physics, NAS of Ukraine, Kyiv)

Astrophysics and Cosmology

Mathematical Physics

Statistical Theory of Many-body Systems

Physics of Biological Macromolecules

Condensed Matter Physics

Physics of Nuclei and Elementary Particles