

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

XIV Young Scientists Conference

Problems of Theoretical Physics

**January 16-17, 2024
Kyiv, Ukraine**

Program

Kyiv 2024

Tuesday, January 16

10-00 Conference opening

Morning Session

10-05 **Taras Patsahan**

Lecture

“Phase behavior of ionic liquids in disordered porous media”

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

10-50 **Oleg Gerasymov, Liudmyla Sidletska**

“Towards the modeling of impurity migration in a heterogeneous media”

Odesa State Environmental University, Odessa, Ukraine

11-10 **Oleg Gerasymov, Heorhiy Kudashkin**

“Towards the influence of compaction on the compressibility of a model bi-component mixture”

Odesa State Environmental University, Odessa, Ukraine

11-30 **Yulian Honchar, Bertrand Berche, Yuriy Holovach, Ralph Kenna**

“How partition function zeros help find out the finite-size scaling above the upper critical dimension”

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

11-50 **BREAK**

12-10 **Oleh Yermakov**

“Theory of light in-fiber coupling and its application to enhanced light collection”

*V. N. Karazin Kharkiv National University, Kharkiv, Ukraine /
Leibniz Institute of Photonic Technology, Jena, Germany*

12-30 **Oleh Yermakov, Sergey Polevoy**

“Polarization management of localized waves”

*V. N. Karazin Kharkiv National University, Kharkiv, Ukraine /
Leibniz Institute of Photonic Technology, Jena, Germany*

12-50 **Oksana Mankovska, Oleh Yermakov**
“Brewster’s angle shift with two-dimensional materials and structures”
Ivan Franko National University of Lviv

13-10 ***LUNCH***

Afternoon Session

14-00 **Sergei Sharapov**
Lecture “History and modern trends in thermoelectric and thermomagnetic phenomena”
Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine

14-45 **Maksym Liul**
“Theoretical study of a transmon-type qubit connected to a semi-infinite transmission line”
B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

15-05 **Oleh Ivakhnenko, Artem Ryzhov, Sergey Shevchenko**
“Optimization of quantum logic gates based on nonadiabatic Landau-Zener-Stückelberg-Majorana transitions”
B. Verkin Institute for Low Temperature Physics and Engineering, Kharkiv, Ukraine

15-25 **Mykola Yelisieiev, Vyacheslav Kochelap**
“Theory of low-frequency electron fluctuations in a quasi-ballistic FET”
Institute of Semiconductor Physics, NAS of Ukraine, Kyiv, Ukraine

15-45 ***BREAK***

16-05 **Pavlo Sukhachov, Felix von Oppen, Leonid Glazman**
“Andreev reflection in scanning tunneling spectroscopy of unconventional superconductors”
University of California, Santa Cruz, USA

16-25 **Yurii Zhuravlov, Nikolai Iorgov**
“Long-time asymptotic series for the Painleve II equation: Riemann-Hilbert approach”

*Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine,
Kyiv, Ukraine*

16-45 **Oleksii Yanchyshen**

“Perturbation equations for Schwarzschild geodesics”

*Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine,
Kyiv, Ukraine*

17-05 **Iurii Babyk**

“Abell 2107: a cool-core cluster with no signature of cooling gas”

Main Astronomical Observatory the NAS of Ukraine, Kyiv, Ukraine

Wednesday, January 17

Morning Session

10-00 **Maksym Druchok**

Lecture

“Application of machine learning approaches to the generation of organic compounds and prediction of their properties”

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

10-45 **Andrii Terets, Tymofii Nikolaienko**

“Revealing inaccuracies of the GFN1-xTB semi-empirical method with machine-learning toolset”

Taras Shevchenko National University of Kyiv;

Chuiko Institute of Surface Chemistry, NAS of Ukraine

11-05 **Roman Skorokhod, Oleksandr Koropov**

“The Mutual Influence of Production Rate of Point Defects and Temperature on the Effects of Radiation-Induced Segregation in the Fe-20Cr-8Ni Alloy”

Institute of Applied Physics of the NAS of Ukraine, Sumy

11-25 **Artur Ovcharenko, Oleksandr Lebed**

“Spatial coherence of compact sources with respect to X-ray phase contrast imaging formation”

Institute of Applied Physics of the NAS of Ukraine, Sumy

11-45 *BREAK*

12-05 **Yaroslav Zolotaryuk**
Lecture “Nonlinear wave phenomena in Josephson junctions”
Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine

12-50 **Dmytro Karakuts, Kostiantyn Yershov, Denis Sheka**
“Influence of the variable cross section on the domain wall dynamics in curved ferromagnetic”
Taras Shevchenko National University of Kyiv

13-10 *LUNCH*

14-00 **Nursultan Kalzhigitov, Victor Vasilevsky**
“Nature of Pauli resonances states in light nuclei”
Al-Farabi Kazakh National University, Almaty, Republic of Kazakhstan

14-20 **Kostiantyn Shaulskiy, Sergei Maydanyuk, Victor Vasilevsky**
“Bremsstrahlung emission in proton-deuteron scattering and nucleon-nucleon forces”
Institute for Nuclear Research NAS of Ukraine, Kyiv, Ukraine

14-40 **Musfer Adzhymambetov, Yuri Sinyukov**
“Dynamic Picture of Relativistic Heavy-Ion Collisions”
Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine, Kyiv, Ukraine

15-00 **Serhii Chernyshenko, Tetiana Obikhod**
“Searches for axions in proton-proton and ion-ion collisions at energies of 5.02 TEV and 13 TEV”
Institute for Nuclear Research NAS of Ukraine, Kyiv, Ukraine

15-20 *BREAK*

15-40 **Mykyta Dmytriiev, Vladimir Skalozub**
“Contribution of one-loop corrections in the decoupling limit of generalized Yukawa model”
Oles Honchar Dnipro National University, Dnipro, Ukraine

- 16-00** **Oleksandr Khasai, Eduard Gorbar, Volodymyr Gorkavenko, Oleg Ruchayskiy, Mariia Tsarenkova**
“Constraints on the parameters of the neutrino extension of the Standard Model”
Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine, Kyiv, Ukraine
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- 16-20** **Roman Poberezhnyuk, Horst Stoecker, Volodymyr Vovchenko**
“Quantum van der Waals theory of nuclear matter with quarkyonic phase”
Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine, Kyiv, Ukraine
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- 16-40** **Volodymyr Kuznietsov, Volodymyr Vovchenko, Roman Poberezhnyuk, Oleh Savchuk, Volker Koch, Mark Gorenstein, Horst Stoecker**
“Molecular dynamics analysis of particle number fluctuations of a first-order phase transition”
University of Houston, USA
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- 17-00** *Closing of the conference*