

XIV Conference of Young Scientists "Problems of Theoretical Physics"

Tuesday 16 January 2024 - Thursday 18 January 2024

BITP & Zoom

Scientific Programme

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 Painlevé 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

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 Shaulskyi, 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

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

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

17-00 Closing of the conference

Astrophysics and Cosmology

Mathematical Physics

Statistical Theory of Many-body Systems

Physics of Biological Macromolecules

Condensed Matter Physics

Physics of Nuclei and Elementary Particles