

NATIONAL ACADEMY OF SCIENCES OF UKRAINE

**Pidstryhach Institute for Applied Problems of
Mechanics and Mathematics**

Council of young scientists and specialists

*Conference of young scientists
« Pidstryhach readings - 2024 »*

PROGRAM

Lviv

May 27-29, 2024

PROGRAM COMMITTEE


- | | |
|---|--|
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| <input type="checkbox"/> Pelykh V. O. | cor. - member NASU, (co-chairman) |
| <input type="checkbox"/> Kuz' A. M. | (secretary) |
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ORGANIZATIONAL COMMITTEE

- **Anton Kuz,**
- **Yuriy Taistra ,**
- **Yulia Maksymiv**
- **Roman Andriychuk,**
- **Yuriy Boychuk,**
- **Rostyslav Bovgyra ,**
- **Vasyl Beshley ,**

PROGRAM OVERVIEW

May 27 (Monday)

- | | | |
|-----------------------|---|---------------------------------|
| *10:00 – 10:50 | <input type="checkbox"/> | opening ceremony |
| 10:50 – 11:00 |  | conference photo (screenshot) |
| 11.00 – 13:00 | <input type="checkbox"/> | plenary session |
| 13:30 – 14:30 | <input type="checkbox"/> | lunch break |
| 14:30 – 17:00 | <input type="checkbox"/> | sectional session |

May 28 (Tuesday)

- | | | |
|----------------------|--------------------------|-----------------------------|
| 10:00 – 13:00 | <input type="checkbox"/> | parallel sectional sessions |
| 12:30 – 14:00 | <input type="checkbox"/> | lunch break |
| 13:45 – 16:15 | <input type="checkbox"/> | sectional session |

May 29 (Wednesday)

- | | | |
|----------------------|--------------------------|-------------------|
| 10:00 – 13:00 | <input type="checkbox"/> | sectional session |
| 15:00 | | closing ceremony |

The regulations of the conference provide for sectional meetings in two main areas: *A. Mechanics and mathematical modeling* and *B. Mathematics*. The duration of the plenary talk is up to 25 minutes, sectional talk is up to 15 minutes

All sectional meetings will be held online in Zoom, links will be sent to all participants before the conference.

The opening/closing ceremony of the conference will take place in the Assembly Hall of the Institute with a parallel broadcast in Zoom.

***Please note that the time of the meetings may be shifted in case of planned (or emergency) power outage schedules, which will be notified to the participants before the start of the meetings via e-mail, if will be possible. Sorry for the possible inconveniences.**

PROGRAM

Opening of the conference **on May 27, 10:00 - 10:50**
Assembly hall of the Institute + Zoom

Introductory speech of the director of the Institute for Applied Problems of Mechanics and Mathematics of the National Academy of Sciences of Ukraine, Academician of the National Academy of Sciences of Ukraine **Kushnir Roman Mykhailovych**. Welcome speeches of the heads of the Program and Organization Committees.

PLENARY SESSION

May 27 , 11:00 - 13:00

Chairman: **Kushnir R.M.**
Secretary: **Kuz A.M.**

Yuriy Tokovyy. Thermoelastic analysis of FGM brief historical overview
(*Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine*)

Mykhailo Symotyuk. Diophantine approximations in the group of unit quaternions (*Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine*)

Yuriy Kononov. On the stability of rotation in a medium with resistance of a free system of two and three elastically connected solid bodies with a liquid (*Institute of Applied Mathematics and Mechanics of of NAS of Ukraine*)

Dinesh Kumar Baghel*, **Alex Ravsky****, **Erel Segal-Halevi*** . k-times bin packing and its application to fair electricity distribution (* *School of Computer Science, Ariel University, Ariel, Israel* ; ** *Institute for Applied Problems of Mechanics and Mathematics of National Academy of Sciences of Ukraine, Lviv, Ukraine*)

SECTIONAL MEETINGS

Section A. Mechanics and mathematical modeling

May 27 , 14:00 - 17:00

Chairman: **Marchuk M. V.**

Secretary: **Kuz' A. M.**

Bovgyra Rostyslav. Ab initio study of structural and electronic properties of β - Ga_2O_3 nanoclusters (*Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine*)

Novytskyi Victor. Mathematical model of blood movement in the post-COVID giant capillary (*Institute of Mathematics of NAS of Ukraine*)

Lysenko Anna, Storozhuk Yevhen. Fluctuation three-layer cylindrical shells of elliptical section with ribbed filler and elastic base (*S.P. Tymoshenko Institute of Mechanics of NAS of Ukraine*)

Evstigneev Boris. Simulation of magnetic permeability of medium with chaotically arranged small-size particles (*Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine*)

Savka Stepan. Morphological and structural properties of nanopowder metal oxides: the method of molecular dynamics (*Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine*)

Senyk Julia Study of stress distribution in thin films with defined material characteristics. (*Ukrainian National Forestry University*)

Taras Nazarovets. Simulation of the effect of electromagnetic radiation of the 4g/5g range on the human body (*Lviv Polytechnic National University*)

Bohdan Karkulovskiy . Modeling the physical characteristics of a microsolenoid (*Lviv Polytechnic National University*)

Volodymyr Bodnar, Mykhailo Marchuk. Features of the mathematical model of the flutter of plates-strips pliable to transversal shear. *Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine*)

Section A. Mechanics and mathematical modeling

May 28 , 10:00 - 13:00

Chairman: **Matus V.V.**
Secretary: **Taystra Yu.B.**

- Andriychuk Roman, Rabosh Roman, Maksimiv Julia.** SH-wave diffraction on a periodic system of thin non-contrast piezo-ceramic inclusions (*Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine*)
- Pasternak Yaroslav, Hotsyk Ihor.** Thermoelasticity of a quasi-crystalline medium with a crack under arbitrary temperature distribution of its edges (*Lesya Ukrainka Volyn National University*)
- Korniychuk Andriy, Pasternak Yaroslav.** Thermal strain compatibility conditions in 1d quasicrystal medium (*Lesya Ukrainka Volyn National University*)
- Mohylyak Ivan.** Nanostructuring of the Si surface when exposed to laser pulses (*Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine*)
- Kozachok Oleg.** Contact wear of bodies in a local area with an increased coefficient of friction (*Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine*)
- Solyar Olga.** Frictional interaction of elastic bodies with complex contact areas (*Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine*)
- Vasilyev Kirill.** Longitudinal shear of a two-layer thin band anisotropic inclusion (*IPPMM named after Ya. S. Podstrygach of the National Academy of Sciences of Ukraine*)
- Vengrin Yury.** Photoluminescent properties of nanopowder Ga_2O_3 in gases (*Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine*)
- Shuflyak Volodymyr.** Solving nonlinear initial-boundary value problems using numerical methods. (*Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine*)
- Sass Taras, Kolyano Yaroslav, Klyuch Marta.** Numerical analysis of non-stationary convection heat conduction problem for polymer-cardboard composite (*Ukrainian Academy of Printing*)

Section B. Mathematics May 28 , 10:00 - 13:00

Chairman: **Shchedryk V. P.**
Secretary: **Kuz' A.M.**

- Pozharska Kateryna.** New sharp bounds for the norms of projection operators, discretization and optimal sampling recovery (*Institute of Mathematics of NAS of Ukraine*)
- Skuratoskii Ruslan.** Extended special linear $ESL_2(F_p)$ group and matrix equations (*V.I. Vernadsky Taurida National University, Kyiv, Ukraine*)
- Skuratoskii Ruslan.** Normal subgroups of iterated wreath product of symmetric groups (*V.I. Vernadsky Taurida National University, Kyiv, Ukraine*)
- Svitlana Gembarska, Ihor Romanyuk, Vasylyuk Nestor.** best approximations of the nikol'skii-besov-type classes of periodic functions of several variables (*Lesya Ukrainka Volyn National University*)
- Denega Iryna, Zabolotny Yaroslav.** Extremal problem on domains containing ellipse points (*Institute of Mathematics of NAS of Ukraine*)
- Salimov Ruslan, Klischuk Bohdan.** The asymptotic behavior of the diameter of the image of the ball (*Institute of Mathematics of NAS of Ukraine*)
- Pyrch Nazar.** On graphs and M-equivalence of the pairs (*Lviv Polytechnic National University*)
- Dzhus Oleksii.** A comprehensive mathematical model for analyzing and optimizing the results of rotator cuff rehabilitation (*Lviv Polytechnic National University*)
- Mitrofanov Mykhailo, Ravsky Oleksandr.** On fair representability of socially distant subsets of the real line (*Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine*)
- Raievska Iryna, Raievska Maryna.** Braces and skew-braces via gap: YangBaxter and LocalNR packages (*University of Warsaw, Poland; Institute of Mathematics of NAS of Ukraine*)
- Bondarenko Vitaly*, Styopochkina Marina**.** Minimax equivalence and oversupercritical posets (**Institute of Mathematics of NAS of Ukraine, **Polissia National University*)
- Satur Oksana.** Equilibrium states of dynamical conflict systems with a point spectrum (*Institute of Mathematics of NAS of Ukraine*)

Section B. Mathematics. May 28 , 13:45 – 16:15

Chairman: **Simotiuk M. M.**

Secretary: **Kuz' A. M.**

Atlasyuk Olena, Mykhaylets Volodymyr. ODE systems with boundary inhomogeneous conditions containing higher-order derivatives (*Institute of Mathematics of NAS of Ukraine*)

Petkov Igor *, Salimov Ruslan, Stefanchuk Maria**.** Local Hölder continuity of solutions to nonlinear Beltrami equation (**Admiral Makarov National University of Shipbuilding, **Institute of Mathematics of NAS of Ukraine*)

Doroshenko Daniil. Modification of the theory of stability of solutions of differential equations (*Oles Honchar Dnipro National University*)

Bychkov Andrii, Zozulia Yevhen. On the generalized weak Harnack inequality for non-negative super-solutions of quasilinear elliptic equations with absorption term (*Institute of Applied Mathematics and Mechanics of NAS of Ukraine*)

Vinnichenko Oleksandra. Multiplicative separation of variables for finding solutions of the dispersionless Nizhnik equation (*Institute of Mathematics of NAS of Ukraine*)

Kovalenko Oleksandra, Semenov Volodymyr, Kharkiv Oleg. Extrapolation from the past for variational inequalities (*Taras Shevchenko Kyiv National University*)

Vasylieva Iryna. Smooth linearization of contractive random dynamical systems. (*University of Klagenfurt Klagenfurt, Austria*)

Soldatov Vitaly. About solvability of the most general linear boundary-value problems in spaces of smooth functions (*Institute of Mathematics of NAS of Ukraine*)

Anikushyn Andrii, Nazarchuk Viktoria . On a priori inequalities for the systems described by pseudo-parabolic differential equations (*Taras Shevchenko National University of Kyiv*)

Voloshyn Oleksandr. Isomorphism of nonlinear reaction–convection–diffusion equations (*Institute of Mathematics of NAS of Ukraine*)

Kuduk Grzegorz . Problem with nonhomogeneous integral conditions for system of partial differential equations of fourth order (*Faculty of Mathematics and Natural Sciences University of Rzeszow, Poland*)

Section B. Mathematics May 29 , 10:00 - 13:00

Chairman: **Pelykh V.O.**

Secretary: **Kuz' A. M.**

Kuz' Anton. A problem with integral conditions for PDE with Legendre operators (*Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine*)

Chepurukhina Iryna, Murach Aleksandr. On elliptic problems with rough boundary data in Besov distribution spaces (*Institute of Mathematics of the NAS of Ukraine*)

Fedunyk-Yaremchuk Oksana. Kolmogorov widths of the nikol'skii-besov- type classes of periodic functions of several variables (*Lesya Ukrainka Volyn National University*)

Repetylo Sofia. Boundary problem with mixed conditions for systems of PDE, not solved with respect to the highest derivative in time (*Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine*)

Huczek Aleksandra. Around the Karlsson-Nussbaum conjecture (*University of the National Education Commission Krakow, Poland*)

Bac Krzysztof. Interesting Properties of Odd and Even Functions (*University of the National Education Commission Krakow, Poland*)

Hasyuk Andrianna, Farmaga Ihor, Hasyuk Yuri. Software method of wound segmentation and planimetry (*Lviv Polytechnic National University*)

Storonsky Roman. Some stability sets of continued fractions with complex partial denominator and numerator equal to one (*Ivan Franko State Pedagogical University of Drohobych*)

Fenyk Mykola. On the solutions of Matheson-Papapetrou equations in the Schwarzschild metric (*Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine*)

Taystra Yuriy*, Kryvko Dmytro.** Electrovac equations in the case of null fields (**Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine, **Lviv Polytechnic National University*)

Slonovskyi Yaroslav *, Ilkiv Volodymyr* , Symotiuk Mykhailo **. A nonlocal problem for the high-order Euler type equation. (**Lviv Polytechnic National University , **Pidstryhach Institute for Applied Problems of Mechanics and Mathematics of NAS of Ukraine*)

Tymkiv Ivan. Conjugation problem with multipoint conditions for hyperbolic equations of high order (*Ivano-Frankivsk National Technical University of Oil and Gas*)