CERTIFICATE

of participant of International Conference
of Young Mathematicians

June 1-3, 2023

is given to

Bilal Basti

Talk: Thermodynamical Problem of
High-Frequency Ultra Sound Waves Equation
with Fractional Operators

Director of the Institute of Mathematics
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Chairman of the
Organizing Committee

Andriiana Plakosh

Thermodynamical Problem of High-Frequency Ultra Sound Waves Equation with Fractional Operators

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Nonlinear fractional partial differential equations (PDEs) have been used to model many phenomena in various fields such as mathematics, physics, and the evolution phenomena in different scientific areas. The property of the fractional derivative operators plays an especially crucial role in applied mathematics and physics, (Kilbas et al. 2006 [8], Diethelm 2010 [6]).

Exact solutions of fractional equations are used to mathematically formulate and, thus, aid in defining the solution of physical and other problems, including functions of several variables such as the propagation of heat or sound, etc. (see [1–5]).

Several mathematical models are used to describe nonlinear acoustics phenomena [7]. For example, In this work, we shall give a fractional model of nonlinear acoustics that is named the space-fractional Jordan-Moore-Gibson-Thompson (JMGT) equation. This equation results from modeling high-frequency ultra sound waves, and is written for $1 < \alpha \leq 2$ as follows

$$\begin{cases} \tau\psi_{ttt} + \mu\psi_{tt} - \kappa^2\partial_x^\alpha\psi - \delta\partial_x^\alpha\psi_t = F\left(x,t,\psi,\psi_x,\psi_{tt},\psi_{xx},(\psi_t)_{xx}\right), \\ \psi\left(\kappa t, t\right) = u_0 \exp\left(-\frac{\kappa^2}{\delta}t\right), \ \psi_x\left(\kappa t, t\right) = (\psi_t)_x\left(\kappa t, t\right) = 0, \end{cases} \tag{1}$$

with

$$\partial_x^\alpha\psi = \begin{cases} \partial_x^2\psi, & \alpha = 2, \\ \mathcal{I}_{\kappa t}^{2-\alpha}\partial_x^2\psi = \frac{1}{\Gamma(2-\alpha)}\int_{\kappa t}^x (x-\tau)^{1-\alpha}\frac{\partial^2}{\partial\tau^2}\psi\left(\tau,t\right)d\tau, & 1 < \alpha < 2, \end{cases}$$

where the unknown scalar function $\psi = \psi(x,t)$ of a space and time variables $(x,t) \in \Omega$ with

$$\Omega = \left\{(x,t) \in \mathbb{R} \times [0,T]; \ \kappa t \leq x \leq \ell\right\}, \text{ for } T > 0 \text{ and } \ell \geq \kappa T,$$

denotes an acoustic velocity, where $\tau, \mu, \kappa, \delta \in \mathbb{R}_+^*$, $u_0 \in \mathbb{C}$, also $F : \Omega \times \mathbb{C} \times \mathbb{C} \times \mathbb{C} \times \mathbb{C} \times \mathbb{C} \to \mathbb{C}$ is a nonlinear function.

The major goal of this work is to determine the existence and uniqueness for the fractional-order's problem of partial differential equation (1), under the traveling wave form

$$\psi\left(x,t\right) = \exp\left(-\frac{\kappa^2}{\delta}t\right)u\left(x - \kappa t\right), \text{ with } \kappa, \delta \in \mathbb{R}_+^*. \tag{2}$$

The basic profile u is not known in advance and is to be identified.

For the forthcoming analysis, we impose the following assumptions

(A1) F is a continuous function that is invariant by the change of scale (2). It gives us

$$\begin{aligned} F\left(x,t,\psi,\psi_x,\psi_{tt},\psi_{xx},(\psi_t)_{xx}\right) &= \exp\left(-\frac{\kappa^2}{\delta}t\right) \times \\ &\quad \left(\delta\kappa f\left(\eta,u,u',u''\right) - \kappa^3\tau u'''\right), \end{aligned} \tag{3}$$

where $\eta = x - \kappa t$ and $f : [0,\ell] \times \mathbb{C} \times \mathbb{C} \times \mathbb{C} \to \mathbb{C}$ is a continuous function.

(A2) There exist three positive constants $\beta, \gamma, \lambda > 0$ so that the function f given by (3) satisfies

$$\left|f\left(\eta,u,v,w\right) - f\left(\eta,\bar{u},\bar{v},\bar{w}\right)\right| \leq \beta\left|u - \bar{u}\right| + \gamma\left|v - \bar{v}\right| + \lambda\left|w - \bar{w}\right|, \ \forall\beta,\gamma,\lambda > 0,$$

for each $\eta \in [0, \ell]$, and any $u, v, w, \bar{u}, \bar{v}, \bar{w} \in \mathbb{C}$.

$(A3)$ There exist four nonnegative functions $a, b, c, d \in C\left([0, \ell], \mathbb{R}_+\right)$, such that

$$|f(\eta, u, v, w)| \leq a(\eta) + b(\eta)|u| + c(\eta)|v| + d(\eta)|w|, \ \forall \eta \in [0, \ell],$$

for any $u, v, w \in \mathbb{C}$ and $\eta \in [0, \ell]$.

We denote by ϖ the positive constant defined by

$$\varpi = \max\left\{\frac{\ell(|q| + \gamma) + \alpha(|\theta| + \lambda)}{\ell^{1-\alpha}\Gamma(\alpha+1)}, \frac{\ell(|q| + c^*) + \alpha(|\theta| + d^*)}{\ell^{1-\alpha}\Gamma(\alpha+1)}\right\}.$$

Where $q = \frac{\kappa^2}{\delta^2}\left(\frac{3\tau\kappa^2}{\delta} - 2\mu\right)$, $\theta = \frac{\kappa}{\delta}\left(\frac{3\tau\kappa^2}{\delta} - \mu\right)$, and

$$a^* = \sup_{\eta \in [0,\ell]} a(\eta), \ b^* = \sup_{\eta \in [0,\ell]} b(\eta), \ c^* = \sup_{\eta \in [0,\ell]} c(\eta), \text{ and } d^* = \sup_{\eta \in [0,\ell]} d(\eta).$$

Throughout the rest of this paper, we put $p = \frac{\kappa^3}{\delta^3}\left(\frac{\tau\kappa^2}{\delta} - \mu\right)$.

Now, we give the principal theorems of this work.

Theorem 1. *Assume that the assumptions* $(A1) - (A3)$ *hold. If we put* $\varpi \in (0,1)$ *and*

$$\ell^{\alpha+1}\left(\frac{\kappa^3}{\delta^3}\left|\frac{\tau\kappa^2}{\delta} - \mu\right| + b^*\right) < \Gamma(\alpha+2)(1-\varpi), \tag{4}$$

then, there is at least one solution of the Cauchy problem (1) on Ω *in the traveling wave form (2).*

Theorem 2. *Assume that the assumptions* $(A1), (A2)$ *hold. If we put* $\varpi \in (0,1)$ *and*

$$\frac{\ell^{\alpha+1}\left(\frac{\kappa^3}{\delta^3}\left|\frac{\tau\kappa^2}{\delta} - \mu\right| + \beta\right)}{\Gamma(\alpha+2)(1-\varpi)} < 1, \tag{5}$$

then the Cauchy problem (1) admits a unique solution in the traveling wave form (2) on Ω.

1. Arioua Y., Basti B. and Benhamidouche N., *Initial value problem for nonlinear implicit fractional differential equations with Katugampola derivative*, Appl. Math. E-Notes, 19 (2019), 397–412.

2. Basti B. and Arioua Y., *Existence study of solutions for a system of n-nonlinear fractional differential equations with integral conditions*, J. Math. Phys. Anal. Geom., 18(3) (2022), 350–367.

3. Basti B., Arioua Y. and Benhamidouche N., *Existence and uniqueness of solutions for nonlinear Katugampola fractional differential equations*, J. Math. Appl., 42 (2019), 35–61.

4. Basti B., Arioua Y. and Benhamidouche N., *Existence results for nonlinear Katugampola fractional differential equations with an integral condition*, Acta Math. Univ. Comenian., 89 (2020), 243–260.

5. Basti B. and Benhamidouche N., *Existence results of self-similar solutions to the Caputo-type's space-fractional heat equation*, Surv. Math. Appl., 15 (2020), 153–168.

6. Diethelm K., *The Analysis of Fractional Differential Equations*, Springer Berlin, 2010.

7. Djemiat R., Basti B. and Benhamidouche N., *Existence of traveling wave solutions for a free boundary problem of a higher-order space-fractional wave equation*, Appl. Math. E-Notes, 22 (2022), 427–436.

8. Kilbas A. A., Srivastava H. H. and Trujillo J. J., Theory and Applications of Fractional Differential Equations, Elsevier Science B.V, Amsterdam, 2006.

Thursday, 1st of June

Kyiv Time UTC+3

10:30 - 11:00	**Opening Ceremony** Meeting ID: 849 9975 1600 Access code: 280606				
	Algebra, Geometry and Topology Chairperson: *Andriana Plakosh*	**Applied and Computational Mathematics** Chairperson: *Oleksandr Lahodzinskyi*	**Differential Equations and Mathematical Physics** Chairperson: *Vitalii Soldatov*	**Probability and Statistics** Chairperson: *Georgii Riabov*	**Theory of Functions and Functional Analysis** Chairperson: *Sophiia Ratushniak*
	Meeting ID: 849 9975 1600 Access code: 280606	Meeting ID: 546 666 1943 Access code: Pifagorbox	Meeting ID: 859 2566 6183 Access code: 883621	Meeting ID: 870 1998 6880 Access code: 219555	Meeting ID: 913 7808 6623 Access code: 301613
11:00 - 11:15	*Kateryna Antoshyna* Graphs with parity conditions between non-cut vertices	*Süleyman Cengizci* A Computational Study on Natural Convection Phenomena	*Tetiana Skorobohach* On Fredholm Boundary-Value Problems In Sobolev-Slobodetskiy Spaces	*Emanuela Gussetti* On ergodicity of invariant measures for the stochastic Landau-Lifschitz-Gilbert equation in 1D	*Atanu Manna* On improved discrete Hardy's inequality
11:20 - 11:35	*Bohdan-Yarema Dekhtiar* Line digraphs of polytrees and their weak components	*Julia Kalosha* Stabilization of Controlled Vibrations of the Model of an Orbital Satellite Antenna	*Igor Gapyak* Evolution of correlations in a system of hard spheres	*Vitalii Konarovskyi* Conservative SPDEs as fluctuating mean field limits of stochastic gradient descent	*Mohamed Amine Boubatra* Boas type theorems for the one-dimensional (k;a)-generalized Fourier transform
11:40 - 11:55	*Yur-Liubomysl Dekhtiar* Metric, forward convex-preserving, and continuous maps between graphs	*Thomas Jahn* Sampling numbers of smoothness classes via l^1-minimization	*Oleksandra Lokaziuk* Symmetry analysis of (1+1)-dimensional nonlinear generalized Klein-Gordon equations	*Boris Manikin* Some properties of solutions of the equations with a general stochastic measure	*Zeghad Bochra* The Bergman Popov's subgradient extragradient algorithm for strongly

					pseudomonotone equilibrium problems
12:00 - 12:15	***Dmytro Karvatskyi*** Fractal dimension of the set of subsums for multigeometric series	***Somia Boumimez*** Uniform observability of wave equation by spectral collocation method	***Hichem Kasri*** Decay of solutions of a coupled system in a star-shaped domain with linear boundary and internal feedbacks	***Fatima Khanchouche*** The best and the worst Nash equilibrium and the anarchy price	***Mebarki Khadidja*** Coupled fixed point results for nonlinear contraction in b-fuzzy metric space endowed with graph with application
12:20 - 12:35	***Nikita Arskyi*** On some arithmetic functions for Gaussian integers	***Oleh Samoilenko*** Neuromorphic Computing: Is It Worth It?	***Sara Hamaizia*** Chaos in fractional Duffing equation	***Mohammed Amine Meraou*** Univariate compound models based on random sum of variates with related application	***Sakina Maamar Benzamia*** Norm inequalities for positive semidefinite matrices
12:40 - 12:55	***Bohdan Feshchenko*** Stabilizers of Morse-Bott functions on surfaces and their homotopy type	***Muhammad Sami Siddiqui*** Euler Elastic Model & Its Treatment	***Hichem Khelifi*** Existence and regularity of solutions of nonlinear anisotropic elliptic problem with Hardy potential	***Anastasiia Hrabovets*** Operators of second quantization for Bernoulli noise	***Besma Laouadi*** The CLR Property allows the use of C-Class and Inverse C-Class Functions to establish a Common Fixed Point Theorem in Intuitionistic Menger Space
13:00 - 13:15		***Labid Messaouda*** Synchronization between fractional-order chaotic systems and integer order chaotic systems (fractional-order chaotic systems)	***Daria Diachenko*** Use of Adomyan`s decomposition method in the theory of nonlinear autonomous boundary value problem		***Boudaoud Miloudi*** Entire functions that share zero with their shifts and difference operators
13:20 - 14:00	**Lunch time**				

Kyiv Time UTC+3	Applied and Computational Mathematics Chairperson: *Oleksandr Lahodzinskyi*	Differential Equations and Mathematical Physics Chairperson: *Oleksandra Lokaziuk*	Probability and Statistics Chairperson: *Alexander Weiss*
	Meeting ID: 546 666 1943 Access code: Pifagorbox	Meeting ID: 859 2566 6183 Access code: 883621	Meeting ID: 870 1998 6880 Access code: 219555
14:00 - 14:15	***Meriem Louafi*** Average no-regret & average low-regret controls for a thermoelastic system	***Timon Ruben Weinmann*** Lieb-Thirring Inequalities in Hyperbolic Space	***Georgii Riabov*** Strong flow modifications of stochastic flows
14:20 - 14:35	***Fares Yazid*** Timoshenko system of second sound with time-varying delay: well posedness and stability	***Olena Atlasiuk*** On solvability of generic boundary-value problems	***Oksana Braganets*** A limit theorem for a nested infinite occupancy scheme in random environment
14:40 - 14:55	***Afroun Faïrouz*** Nonparametric estimation of the reliability characteristics of a standby system	***Yevgeniia Yevgenieva*** Weak Harnack inequality for unbounded minimizers of elliptic functionals with non-standard growth	***Dmytro Koitiuk*** The Cauchy problem for the hyperbolic equation of mathematical physics with a random right side
15:00 - 15:15	***Soumia Bensimessaoud*** Global combination synchronization in identical fractional-order chaotic systems using active control	***Iryna Chepurukhina*** On elliptic boundary-value problems in function spaces of low regularity	***Hennadii Navrotskyi*** Asymptotics related to number of upcrossings of a Gausian random process
15:20 - 15:35	***Guezzen Cherifa*** The role of quarantine for containing the epidemic	***Vitalii Soldatov*** On error estimates for the approximation of solutions to general boundary-value problems	***Kyrylo Kuchynskyi*** Quadratic entropy

15:40 - 16:00	**_Bouchra Chennaf_** Vaccination and treatment effects on the dynamic behavior of a TB model	**_Lila Ihaddadene_** Well-posedness of solution to a coupled system wave/Wentzell with nonlinear dampings and delays	**_Naoufel Salhi_** Asymptotics related to generalized self intersection local times of Brownian motion
16:00-16:15	**_Ikram Bouzoualegh_** A New error estimate of generalized Schwarz algorithm for a class of elliptic variational inequalities	**_Ali Khalouta_** A reliable analytical technique for solving nonlinear Caputo time-fractional gas dynamics equations	
16:20-16:35	**_Imane Ouakil_** Analysis of a dynamic viscoelastic frictionless contact problem with adhesion	**_Helal Mohamed_** Fractional Differential Perturbed Equations with Infinite State-Dependent Delay in Fréchet Spaces	
16:40-16:55	**_Safa Guerdouh_** A feasible interior-point algorithm based on a kernel function with a hyperbolic barrier term	**_Bouternikh Salih_** On some properties of meromorphic solutions of q-difference equations in ultrametric fields	
17:00-17:15	**_Maroua Amel Boubekeur_** Impact of mortality of obese people infected with Covid-19 on the dynamic behavior of the Covid-19 model		

Kyiv Time UTC+3	Probability and Statistics Chairperson: *Naoufel Salhi*	Theory of Functions and Functional Analysis Chairperson: *Nataliia Vasylenko*
	Meeting ID: 870 1998 6880 Access code: 219555	Meeting ID: 913 7808 6623 Access code: 301613
16:00-16:15	*Viktor Yuskovych* Asymptotic behaviour of solutions of multidimensional stochastic differential equations	*Taras Vasylyshyn* On isomorphisms of algebras of entire symmetric functions on Banach spaces
16:20-16:35	*Taras Lysetskyi* Transient phenomena for total progeny in Galton-Watson processes with immigration	*Ivan Feshchenko* On the closedness of the sum of subspaces of the space B(H,Y) consisting of operators whose kernels contain given subspaces of H
16:40-16:55	*Mykyta Yakovliev* Asymptotically normal estimation of parameters of mixed fractional Brownian motion with trend	*Vita Baksa* Boundedness of the L-index in a direction of the sum of slice holomorphic functions in the unit ball
17:00-17:15	*Kateryna Kustarova* Description of bonds trading via random point processes	*Yelyzaveta Sviatovets* Crum transformation of the Laguerre operators
17:20-17:35	*Imane Bouazza* On the real-time kernel estimation of some conditional models for functional covariates	*Olena Yakunina* Darboux transformation of the indefinite Sturm-Liouville operators
17:40-17:55		*Mykyta Vieprik* Explicit rank-one constructions for irrational rotations

Friday, 2nd of June

Kyiv Time UTC+3	Algebra, Geometry and Topology Chairperson: *Iryna Kuznietsova*	Applied and Computational Mathematics Chairperson: *Oleksandr Lahodzinskyi*	Differential Equations and Mathematical Physics I Chairperson: *Vitalii Soldatov*	Differential Equations and Mathematical Physics II Chairperson: *Iryna Chepurukhina*	Probability and Statistics Chairperson: *Vitalii Konarovskyi*	Theory of Functions and Functional Analysis Chairperson: *Iryna Denega*
	Meeting ID: 849 9975 1600 Access code: 280606	Meeting ID: 546 666 1943 Access code: Pifagorbox	Meeting ID: 859 2566 6183 Access code: 883621	Meeting ID: 938 531 1448 Access code: RJT8D3	Meeting ID: 870 1998 6880 Access code: 219555	Meeting ID: 939 8780 2228 Access code: 473164
11:00 - 11:15	*Lakehal Rachid* Almost and weakly neighborhood star-Menger	*Maksym Shamrai* Object Detection from UAV Perspective using YOLOv8 and VisDrone Dataset	*Oleksandra Vinnichenko* Point- and contact-symmetry pseudogroups of dispersionless Nizhnik equation and its nonlinear Lax representation	*Oleksandr Pokutnyi* Weak chaos in discrete systems	*Illia Donhauzer* Limit theorems for multifractal products of random fields	*Omar Boussaid* On Symmetric polyconvexity of compact sets
11:20 - 11:35	*Bouchra Merdji* p-biharmonic maps and warped product manifolds	*Volkan Ala* Analytical Solutions of a Nonlinear Stochastic-Fractional Equation	*Anastasia Chernyshenko* On three spectra problem and Ambarzumian's theorem	*Vladyslav Nedostup* Equilibrium position in the nonisotermal chemical reaction model	*Olga Syniavska* Estimation of the parameters of the covariance function of the fractional Brownian field	*Glenn Byrenheid* Rate optimal sparse approximation of break of scale embeddings
11:40 - 11:55	*Belkhiri Radja* η −(skew) Hermitian reflexive solution to a system of real quaternion matrix equations	*Raouf Ziadi* A Derivative-Free algorithm for continuous global optimization	*Kamlesh Raghuwanshi* On Controllability of Linear Control Delay Systems	*Radhouane Aounallah* Asymptotic behavior of a viscoelastic wave equation with time-varying delay in	*Alexander Weiss* Intermittency Phenomena of Mass Distributions of Stochastic Flows with Interaction	*Rachid Yahi* The approximation property for spaces of Lipschitz functions

				fractional internal feedbacks		
12:00 - 12:15	***Rizwan Alam Alam*** On Closedness Of Some Permutative Posemigroup Identities	***Abderrazak NABTi*** Global Existence and Blow-up of Solutions of Fractional evolution problem	***Ouaar Fatima*** Approximate Solutions of Ordinary Differential Equations Via Metaheuristic Algorithms	***Allal Mehazzem*** Homoclinic solutions and Solitons in the discrete nonlinear Helmholtz-Schrodinger equation	***Fetima Boudjedaimi Ladjimi*** On the asymptotic behavior of one class of two-dimensional Markov chains	***Zouheyr Zeghad*** Embeddings properties of variable Besov-type spaces
12:20 - 12:35	***Saadi Djazia*** Characteristic sets of a picture fuzzy set	***Hassan Messaoudi*** Asymptotic behavior for nonlinear piezoelectric beams with magnetic effects	***Nor-El-Houda Beghersa*** On the implicit stationary differential equations in Hilbert spaces	***Ibrahim Lakehal*** Stabilisation and existence of non linear Euler-Bernoulli beam	***Ismahen Bernou*** Limit theorems for dependent random variables with infinite means	***Hadjer Ounis*** Generalized c-almost periodic functions defined on vertical strips in the complex plane
12:40 - 12:55	***Katherina von Dichter*** The Diameter-width-ratio for complete and pseudo-complete sets	***Nourelhouda Groun*** Data-Driven Modal Decomposition Technique for Medical image analysis	***Chahrazed Boudefla*** Nonlocally controllability of mild solutions for neutral evolution problems with finite state-dependent delay	***Farid Chabane*** Some analysis on generic p-Laplacian boundary value problems of weighted fractional impulsive differential equations	***Farida Hamrani*** Simulating Performance: A Comparative Study Between two Regression Estimators for Left Truncated Data	***Kshitij Kumar Pandey*** A note on Shauder bases of mixed norm spaces with an application to fractal Shauder bases
13:00 - 13:15		***Sayooj Aby Jose*** Analyzing the Spread of Chickenpox: Implications for Health Planning	***Imane Benabdallah*** The Extended of 16th Hilbert Probleblem For The Discontinuous Piecewise Differential Systems Formed by Quartic Hamiltonien Centers and linear Center Separated by a Straight line	***Aziza Bachmar*** Variational analysis of an electro-viscoplastic contact problem		***Athmane Ferradi*** Sequences in Banach spaces
13:20 - 14:00	**Lunch time**					

Kyiv Time UTC+3	Algebra, Geometry and Topology Chairperson: *Iryna Kuznetsova*	Applied and Computational Mathematics Chairperson: *Oleksandr Lahodzinskyi*	Differential Equations and Mathematical Physics I Chairperson: *Vitalii Soldatov*	Differential Equations and Mathematical Physics II Chairperson: *Olena Atlasiuk*	Probability and Statistics Chairperson: *Olga Syniavska*	Theory of Functions and Functional Analysis Chairperson: *Ivan Feshchenko*
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14:00 - 14:15	*Shabnam Abbas* On closedness of right(left) normal bands and left(right) quasinormal bands	*Ihor Raynovskyy* Lanchester's equations in model of conflicting sides	*Nicolas Zadeh* Derivation and analysis of a Fokker-Planck equation describing a population of spiking resonate-and-fire neurons	*Baya Laadjal* Transcritical and flip bifurcation in discrete-tire modèle with fractional-order	*Redjam Ibtissem* Comparative study of some methods of regularization in the linear model	*Rachid Belgacem* Jafari transform of MABC fractional integral operator
14:20 - 14:35	*Federico Giovanni Infusino* Pre-Torsion Theories on Concrete Categories	*Mehamdia abd Elhamid* New modification of nonlinear conjugate gradient method and application to non-parametric estimation	*Louiza Baymout* The birth of limit cycles in a family of planar piecewise differential systems having two concentric circles as switching manifold	*Sami Loucif* Global well-posedness and exponential decay of fully dynamic and electrostatic or quasi-static piezoelectric beams subject to a some distributed delay types	*Zahia Khemissi* Weighted Least Square Estimation: Monte Carlo Simulation and Application	*Dahmane Achour* The space of vector-valued strongly Lorentz sequences
14:40 - 14:55	*Yagub Najaf Aliyev* Apollonius problem and caustics of an ellipsoid	*Nacer Meriem* Modified Salp Swarm Algorithm for Global Optimisation with the Use of Chaos	*Omar Choucha* Ulam-Hyers-Rassias stability of boundary value discrete fractional hybrid equation	*Asma Amira Batahri* Existence and asymptotic behavior for a nonlinear elliptic problem involving the fractional p-Laplacian	*Zahia Ahmedi Ezzourgui* Queueing system with working vacation and strong and weak disasters with repair and application in network on chip	*Beyaz Basak Eskisehirli* A disjoint hypercyclicity criterion with applications to Toeplitz operators

15:00 - 15:15	**Kuznietsova Iryna** On deformational properties of Morse functions on non-oriented surfaces	**Souli Choubeila** Interior point method for convex quadratic programming	**Nour Elhouda Allaoui** Weak solutions for the $p_i(x)$-Laplacian equations with variable exponents and degenerate coercivity and L^m data	**Nabila Barrouk** Invariant regions and Asymptotic behavior for reaction-diffusion systems with a tridiagonal symmetric Toeplitz matrix of diffusion coefficients	**Yacine Chaib** The robust estimator for LTRC model and dependent data	**Noura Laksaci** Fixed point theorem for non self operators on Strictly Star Shaped Sets of Generalized Banach Spaces and applications
15:20 - 15:35	**Dmytro Popovych** Lie orthogonal operators on metric Lie algebras	**Benatmane Sara** An innovative data security method using elliptic curve cryptography	**Aicha Ghanem** The Brachistochrone parametric curves the solution in the non-singular case $k > 0$	**Zineb Bouslah** On the stability of finite difference schemes for nonlinear diffusion equations	**Ahlam Guiatni** Economic Trend Resistant Fractional Factorial Designs of Resolution IV Based on Hadamard Matrices	**Maatougui Belaala** On strictly Lipschitz (p,r,s)- summing operators
15:40 - 16:00	**Oleksandr Pypka** On some properties of Poisson (2-3)-algebras	**Samia Kettab** A new wide neighbourhood primal-dual algorithm for quadratic programming	**Said Mazouz** Nevanlinna theory in a punctured disc and application to linear differential equations	**Serhii Koval** Pseudo-discrete symmetries		**Toufik Tiaiba** Some property of factorable Lipschitz quasi weakly and unconditionally p-nuclear operators
16:00- 16:15	**Marharyta Pistruil** Fundamental theorems of quasi-geodesic mappings of generalized-recurrent spaces	**Rouibah Khaoula** Numerical study for an integro-differential nonlinear volterra equation	**Soumia Saidi** On a dynamical system involving Caputo fractional derivative	**Benzahi Ahlem** Existence of solution of Caputo Fabrizio fractional differential equations with not instantaneous impulses using Darbo's fixed point theorem		**Sohir Zid** Characterization of invertible operators in delta (H) via Duggal transform
16:20- 16:35		**Badaoui Soufiane** Study of a competition model between two species of microorganisms with interaction intraspecific in a chemostat	**Abdelbadie Younes** An approach for solving a Hamilton-Jacobi type problem with fractional diffusion	**El-Hadi Kamel** Existence of solutions for a plate equation with a source term and non-local boundary condition		

16:40-16:55		*Oleksandr Lahodzinskyi* Three-dimensional steady-state resonant sloshing in square-base tank	*Messaouda Ben Attia* A type of the evolution free boundary problems in a bounded domain of R^3: study the uniqueness of the solution	*Mahmoudi Sofiane* Wiman-Valiron theory of entire functions and linear fractional differential equations		

Kyiv Time UTC+3	**Probability and Statistics** Chairperson: *Kyrylo Kuchynskyi*
	Meeting ID: 870 1998 6880 Access code: 219555
16:00-16:15	*Mykola Moroz* Perron-Series Representation of Real Numbers ($\bar{P}$-Representation) and Frequency of Digits in the $\bar{P}$-Representation
16:20-16:35	*Rostyslav Kryvoshiya* About one system of signs, distributed according to a absolutely continuous distribution
16:40-16:55	*Dmytro Skakun* About one absolutely continuous function that does not satisfy the Lipshitz condition, given in terms of the Q^*_s -representation of real numbers
17:00-17:15	*Oleh Makarchuk* On the structure of the distribution of one random series
17:20-17:35	*Oleksandr Volkov* One power series distribution with parameterization by mean

Saturday, 3rd of June

Kyiv Time UTC+3	Differential Equations and Mathematical Physics Chairperson: *Vitalii Soldatov*	Probability and Statistics Chairperson: *Hennadii Navrotskyi*	Theory of Functions and Functional Analysis Chairperson: *Bogdan Klishchuk*
	Meeting ID: 859 2566 6183 Access code: 883621	Meeting ID: 870 1998 6880 Access code: 219555	Meeting ID: 849 1366 4619 Access code: 964827
11:00 - 11:15	*Ivanna Bondar* Resonance case for weakly perturbed linear boundary value problems for systems of integro-differential equations with a degenerate kernel	*Valeriya Kotelnikova* A law of the iterated logarithm for sums of independent indicators, with application to Karlin's occupancy scheme	*Ruslan Shanin* Oscillations in the discrete case
11:20 - 11:35	*Olga Chepok* Asymptotic Representations of Rapidly Varying Solutions of Essentially Nonlinear Second Order Differential Equations with Regularly and Rapidly Varying Nonlinariaties	*Ievgen Karnaukh* A note on asymptotic behavior of the overshoot distribution for a Lévy process	*Vitalii Shpakivskyi* Sigma-monogenic functions in commutative algebras
11:40 - 11:55	*Shuja-ud-din Razeen-ud-din* Dynamic integral inequalities with their applications in terminal value problems on time scales	*Olga Prykhodko* Asymptotic behavior of the parameter estimators in the Vasicek model based on discrete observations	*Sofiia Ratushniak* A_2-continued fractions and their applications
12:00 - 12:15	*Bilal Basti* Thermodynamical Problem of High-Frequency Ultra Sound Waves Equation with Fractional Operators	*Diana Avetisian* Asymptotic properties of parameter estimators in mixed fractional stochastic heat equation	*Mariia Stefanchuk* On the functional asymptotic of solutions of the nonlinear Cauchy-Riemann-Beltrami type equation

12:20 - 12:35	**Hanane Chinoune** Numerical solutions of nonlinear fractional differntial equation using a modified ADM	**Abdelatif Benchérif Madani** On the boundary local time of a reflected diffusion in space	**Liudmyla Vyhivska** The estimates of the inner radii of symmetric non-overlapping domains
12:40 - 12:55	**Abibssi Imane** Mild solution of nonlocal neutral perturbed pseudo integrodifferential evolution equations with state dependent delay		**Yaroslav Zabolotnyi** Estimates of some functionals on the classes of functions without common values
13.00 - 14.00	**Lunch time**		

Kyiv Time UTC+3	**Differential Equations and Mathematical Physics** Chairperson: *Ivanna Bondar*	**Probability and Statistics** Chairperson: *Valeriya Kotelnikova*
	Meeting ID: 859 2566 6183 Access code: 883621	Meeting ID: 870 1998 6880 Access code: 219555
14:00 - 14:15	**Anna Anop** On elliptic equations in Lp-Sobolev spaces of generalized smoothnes**s**	**Hadjer Kebir** Nonparametric conditional hazard estimation with ergodic data: a recursive kernel approach
14:20 - 14:35	**Meriem Chabekh** Numerical stability result for damped Shear beam model	**Mohammed Ridha Kouider** Modified bisection algorithm in estimating the extreme value index
14:40 - 14:55	**Abdelkader Dahmani** Growth of solutions of complex linear differential-difference equations with finite logarithmic order meromorphic coefficients	**Soundes Mekki** Statistics and Artificial Intelligence (AI)

15:00 - 15:15	**Meriem Barkat** Averaging methods for piecewise differential systems formed by a linear focus or center and a cubic weak focus or center	**Hayat Ramdani** On queueing system with batch arrivals and disasters
15:20 - 15:35	**Nadjiba Abdi** A minimization problem of an integral functional in Hilbert space	
15:40 - 15:55	**Meryem Belattar** Limit cycles of an integrable class of quintic differential systems with a degenerate singular point	
16:00 - 16:15	**Souheyla Zelmat** Investigation of Commutative Properties of Discontinuous Galerkin and backward Euler Methods in PDE Constrained Optimal Control Problems	
16:20 - 16:35	**Siham Boukarabila** Elliptic Problem With Nonlinear Singularity	

16:40	**Closing Ceremony** Meeting ID: 859 2566 6183 Access code: 883621