

Curriculum Vitae

Kateryna Pozharska (Shvai)

Personal

Date of birth – 04.03. 1994
Nationality – Ukrainian
Marital status – married, 1 child (2022)



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Address

Theory of Functions Department
Institute of Mathematics
National Academy of Sciences of Ukraine
Tereshchenkivska Str. 3, 01024 Kyiv-4, Ukraine

Research interests

Approximation Theory, Information Based Complexity,
Theory of Function Spaces, Nonlinear Approximation,
Sampling Recovery, Data Sparsification, Discretization,
Frame Theory

Languages

Ukrainian (native), Russian (fluent), English (fluent),
German (B2)

PhD thesis “Best approximations and entropy numbers of the classes of periodic multivariate functions”
speciality – 01.01.01 Mathematical analysis
supervisor – Prof. Dr. Romanyuk A.S.
Date of defence – 29.01.2019
Date of approval – 05.03.2019

Education

2015–2018 PhD, Institute of Mathematics of the NAS of Ukraine, Theory of Functions Department, Kyiv, Ukraine

2014–2015 Master’s degree, Lesya Ukrainka Eastern European National University, Faculty of Mathematics, Lutsk, Ukraine (speciality “Mathematics”, master’s degree with honours)

2010–2014 Bachelor’s degree, Lesya Ukrainka Eastern European National University, Faculty of Mathematics, Lutsk, Ukraine (speciality “Mathematics”, bachelor’s degree with honours)

Working experience

09.2022–present Postdoctoral researcher, Group of Prof. Dr. Tino Ullrich. Within the scholarship from the Philipp Schwartz Initiative of the Alexander von Humboldt Foundation. Chemnitz University of Technology, Germany.

12.2021–present Researcher, Group of Prof. Dr. Anatolii Romanyuk. Institute of Mathematics of the NAS of Ukraine.

10.2020–01.2022 Senior Lecturer, Department of Mathematical Analysis and Statistics, Faculty of Information Technology and Mathematics, Lesya Ukrainka Volyn National University.

09.2019–01.2020 Invited researcher, Group of Prof. Dr. Tino Ullrich. Chemnitz University of Technology, Germany.

11.2018–12.2021 Junior researcher, Group of Prof. Dr. Anatolii Romanyuk. Institute of Mathematics of the NAS of Ukraine.

09.2017–12.2019 Junior researcher, Ukrainian State Budget Theme “Extremal Problems of Approximation Theory in Functional Spaces”

Scholarships and Awards

2023	The winner of the All-Ukrainian competition “Young researcher of the year” in the nomination “Scientific cooperation”.
2023	The award of the National Academy of Sciences of Ukraine “Talent, inspiration, work”
2023	Joseph F. Traub Information-Based Complexity Young Researcher Award
2022	The scholarship of the Philipp Schwartz Initiative of the Alexander von Humboldt Foundation
2021	The award of the President of Ukraine for young scientists
2020	The scholarship of the National Academy of Sciences of Ukraine for young scientists
2020	The grant of the National Academy of Sciences of Ukraine for research groups of young scientists of NAS of Ukraine
2011–2015	During the university studies: the scholarships - of the President of Ukraine, - of the Supreme Council of Ukraine, - of the Fund “Only Together” by Igor Palytsia, - Myhaylo Kravchuk scholarship for talented students; - the winner of the All-Ukrainian Competition-Defence of Students Research Works (twice: Vinnytsia, Ivano-Frankivsk); - 3rd place in the All-Ukrainian Students Olimpiad in mathematics (twice, Lviv)

Membership in associations

2024–present	Member of the European Mathematical Society.
2024–present	Member of the European Women in Mathematics Association.
2024–present	Member of the Association for Women in Mathematics.
10.2019–09.2022	Member of the Council of Young Scientists, Institute of Mathematics of the NAS of Ukraine.
12.2019–10.2021	Member of the Council of Young Scientists, Lesya Ukrainka Volyn National University.

Short research visits

- 15-19.06.2024 Technical University of Munich. Research with Dr. Frank Filbir (by invitation).
- 23.03.19-24.04.19 Institute of Mathematics, University of Lübeck, Germany. Visit in the framework of H2020-MSCA-RISE-2014 Project number 645672 (AMMODIT). Research with Prof. Dr. Juergen Prestin.
- 13.11.18-20.12.18 Institute of Mathematics, University of Lübeck, Germany. Visit in the framework of H2020-MSCA-RISE-2014 Project number 645672 (AMMODIT). Research with Prof. Dr. Juergen Prestin.
- 01.08.18-31.08.18 Johann Radon Institute for Computational and Applied Mathematics (RICAM), Austrian Academy of Sciences, Austria. Visit in the framework of H2020-MSCA-RISE-2014 Project number 645672 (AMMODIT). Research with Prof. Dr. Sergei Pereverzyev.

Managerial Activities:

- 18.08.24-23.08.24 Organizer of two Special Sessions “Function recovery and discretization problems” in the 16th International Conference on Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing, University of Waterloo, Canada
- 06.06.22-10.06.22 International Conference “Theory of Approximation of Functions and its Applications”, dedicated to the 80th anniversary of the Corresponding Member of the NAS of Ukraine, Prof. A. Stepanets (1942-2007), Lutsk, Ukraine (Scientific Secretary)
- 03.06.21-05.06.21 International Conference of Young Mathematicians, Kyiv, Ukraine (Member of the Program Committee)
- 20.06.19-26.06.19 International Conference “Functional Methods in Approximation Theory, Differential Equations and Numerical Mathematics IV” dedicated to the 100th anniversary of V. K. Dzyadyk (1919-1998), Svityaz’, Volyn region, Ukraine (Scientific Secretary)
- 06.06.19-08.06.19 International Conference of Young Mathematicians, Kyiv, Ukraine (Member of the Organizing Committee)

- 18.03.19-22.03.19 Final AMMODIT Conference “Mathematics for life sciences”, Kyiv, Ukraine (Member of the Local Organizing Committee)
- 02.09.18-04.09.18 Coordination meeting of the planned project “Spectral optimization: From Mathematics to Engineering and Life Sciences” (SOMELS), Kyiv, Ukraine (Member of the Local Organizing Committee)
- 07.06.17-10.06.17 International Conference of Young Mathematicians in honor of the 100th anniversary of Academician of NASU, Prof. Yu. O. Mitropolskiy, Kyiv, Ukraine (Member of the Local Organizing Committee)

List of publications

- 2024
- (1) K.V. Pozharska, A.S. Romanyuk, V.S. Romanyuk, *Widths and entropy numbers of the classes of periodic functions of one and several variables in the space $B_{q,1}$* , Carpathian Math. Publ. 16, No. 2, 351-366 (2024).
 - (2) K.V. Pozharska, A.S. Romanyuk, S.Ya. Yanchenko, *Best approximations for classes of periodic functions of many variables with bounded dominating mixed derivative*, Ukr. Math. J. 76, No. 7 (2024) (in print).
 - (3) K.V. Pozharska, A.S. Romanyuk, *Estimates for the approximation characteristics of the Nikol'skii-Besov classes of functions with mixed smoothness in the space $B_{q,1}$* . arXiv: 2404.05451.
 - (4) D. Krieg, K. Pozharska, M. Ullrich, T. Ullrich, *Sampling projections in the uniform norm*. arXiv: 2401.02220.
- 2023
- (5) D. Krieg, K. Pozharska, M. Ullrich, T. Ullrich, *Sampling recovery in L_2 and other norms*. arXiv: 2305.07539.
 - (6) A. Romanyuk, V. Romanyuk, K. Pozharska, S. Hem-bars'ka, *Characteristics of linear and nonlinear approximation of isotropic classes of periodic multivariate functions*, Carpathian Math. Publ. 15, No. 1, 78-94 (2023).
- 2022
- (7) K. Pozharska, T. Ullrich, *A note on sampling recovery of multivariate functions in the uniform norm*, SIAM J. Numer. Anal. 60, No. 3, 1363–1384 (2022).

- (8) O. Shvai, K. Pozharska, *On some approximation properties of Gauss-Weierstrass singular operators*, J. Math. Sci. 260, No. 5, 693–699 (2022).
- 2021 (9) A. A. Pozharskyi, K. V. Pozharska, *Recovery of continuous functions of two variables from their Fourier coefficients known with error*, Carpathian Math. Publ. 13, No. 3, 676–686 (2021).
- (10) K. Pozharska, *Best approximations and entropy numbers of the classes of periodic functions of many variables*. In: TEMat monográficos, 2 (2021): Proceedings of the 3rd BYMAT Conference, pp. 147-150.
- 2020 (11) K. V. Pozharska, A. A. Pozharskyi, *Recovery of continuous functions from their Fourier coefficients known with error*, Res. Math. 28, No. 2, 24–34 (2020).
- (12) I. V. Kal’chuk, YU. I. Kharkevych, K. V. Pozharska, *Asymptotics of approximation of functions by conjugate Poisson integrals*, Carpathian Math. Publ. 12, No. 1, 138–147 (2020).
- 2019 (13) K. V. Pozharska, *Entropy numbers of the Nikil’skii – Besov-type classes of periodic functions of many variables*, J. of Math. Sci. 241, No. 1, 64–76 (2019).
- (14) K. V. Pozharska, *Estimates for the entropy numbers of the classes $B_{p,\theta}^\Omega$ of periodic multivariable functions in the uniform metric*, Ukr. Math. J. 70, No. 9, 1439-1455 (2019).
- 2018 (15) K. V. Shvai, *Estimation of the best bilinear approximations for the classes of (ψ, β) -differentiable periodic multivariable functions*, Ukr. Math. J. 70, No. 4, 649–660 (2018).
- (16) Yu. I. Kharkevych, K. V. Pozharska, *Asymptotics of approximation of conjugate functions by Poisson integrals*, Acta et Commentationes Universitatis Tartuensis de Mathematica. 22, No. 2, 235-243 (2018).
- 2017 (17) K. V. Pozharska, *Estimates of the best M -term trigonometric approximations of the classes $L_{\beta,p}^\psi$ of periodic multivariate functions of small smoothness in the space L_q* , Differential equations and related questions of analysis:

Zb. Pr. Inst. Mat. NAN Ukr. 14, No. 3, 293–318 (2017). (in Ukrainian)

(18) K. V. Shvai, *The best M -term trigonometric approximations of the classes of periodic multivariate functions with bounded generalized derivative in the space L_q* , J. Math. Sci. 222, No. 6, 750–761 (2017).

2016 (19) K. V. Shvai, *The best M -term trigonometric approximations of classes of (ψ, β) -differentiable periodic multivariate functions in the space L_q* , J. Num. and Appl. Math. 122, No. 2, 83–91 (2016).

(20) K. V. Shvai, *Estimates of the best orthogonal trigonometric approximations of the generalized multivariate analogues of Bernoulli kernels and classes $L_{\beta,1}^\psi$ in the space L_q* , Differential equations and related questions of analysis: Zb. Pr. Inst. Mat. NAN Ukr. 13, No. 1, 300–320 (2016). (in Ukrainian)

Learning materials

O. L. Shvai, K. V. Pozharska, Methodical recommendations for solving the problems on the discipline “Computer discrete mathematics”, Lutsk, Lesya Ukrainka Volyn National University, 2020, 65 pp.

O. L. Shvai, K. V. Pozharska, Lecture notes on the discipline “Computer discrete mathematics”, Lutsk, Lesya Ukrainka Volyn National University, 2020, 55 pp.

O. L. Shvai, K. V. Pozharska, Collection of tests on the discipline “Computer discrete mathematics”, Lutsk, Lesya Ukrainka Volyn National University, 2020, 52 pp.

Articles in the “Encyclopedia of Modern Ukraine”

2020 “Approximation theory”
http://esu.com.ua/search_articles.php?id=71385

2021 “Inequality”
https://esu.com.ua/search_articles.php?id=74501

Conferences and Workshops

- 10.09.24-13.09.24 6th Workshop on Sparse Grids and Applications, Bonn, Germany (Plenary Speaker)
- 18.08.24-23.08.24 16th International Conference on Monte Carlo and Quasi-Monte Carlo Methods in Scientific Computing, University of Waterloo, Canada (Co-organizer of two Special Sessions, Invited speaker at the Special Session)
- 29.07.24-02.08.24 2nd Analysis Mathematica Conference, Budapest, Hungary
- 23.07.24-25.07.24 Siegmundsburg Workshop, Germany
- 26.06.24-28.06.24 10th International Conference on Mathematical Methods for Curves and Surfaces, Oslo, Norway
- 09.06.24-15.06.24 More on Harmonic Analysis, Strobl, Austria
- 27.05.24-29.05.24 The conference of young scientists “Pidstryhach readings – 2024”, Lviv, Ukraine (online)
- 18.09.23-22.09.23 Workshop and Summer School on Applied Analysis 2023, Chemnitz, Germany
- 02.09.23-06.09.23 Workshop “From Modeling and Analysis to Approximation and Fast Algorithms”, Hasenwinkel, Germany
- 27.08.23-01.09.23 Dagstuhl-Seminar 23351 “Algorithms and Complexity for Continuous Problems”, Schloss Dagstuhl, Leibniz-Zentrum für Informatik, Germany
- 19.06.23-21.06.23 Foundations of Computational Mathematics (FoCM) 2023, Paris, France
- 01.06.23-03.06.23 International Conference of Young Mathematicians, Kyiv, Ukraine (online)
- 21.06.21-25.06.21 9th International Online Conference on “Mathematical Analysis, Differential Equation & Applications MADEA 9”, Bishkek, Kyrgyz Republic
- 16.06.21-18.06.21 Contemporary Analysis and Its Applications. Satellite event of the 8th European Congress of Mathematics, Portorož, Slovenia (online)
- 03.06.21-05.06.21 International Conference of Young Mathematicians, Kyiv, Ukraine (online)

- 26.05.21-28.05.21 Conference of Young Scientists “Pidstryhach readings – 2021”, Lviv, Ukraine (online)
- 12.05.21-13.05.21 International research and practice conference of post-graduate students and students “Young science of Ukraine: priorities and perspectives of research”, Lutsk, Ukraine
- 19.03.21-21.03.21 International Online Workshop on Approximation Theory, Ivano-Frankivsk, Ukraine
- 01.12.20-03.12.20 3rd BYMAT Conference, Valencia, Spain
- 26.10.20-30.10.20 11th International Skorobohatko Mathematical Conference, Lviv, Ukraine
- 16.09.20-19.09.20 International conference dedicated to the 100th anniversary of M. P. Korneichuk (1920-2003), Dnipro, Ukraine
- 26.05.20-28.05.20 Conference of Young Scientists “Pidstryhach Readings – 2020”, Lviv, Ukraine
- 21.05.20-22.05.20 International research and practice conference of young scholars, postgraduates and bachelor students “Challenges and opportunities of modern science”, Rivne, Ukraine
- 04.03.20-08.03.20 Workshop “Analytical Modeling and Approximation Methods” , A meeting within the VolkswagenStiftung project “From Modeling and Analysis to Approximation”, Berlin, Germany
- 23.09.19-27.09.19 Chemnitz Summer School on Applied Analysis 2019 Faculty of Mathematics of the Chemnitz University of Technology, Germany
- 20.06.19-26.06.19 International Conference “Functional Methods in Approximation Theory, Differential Equations and Numerical Mathematics IV” dedicated to the 100th anniversary of V. K. Dzyadyk (1919–1998), Svityaz’, Ukraine
- 06.06.19-08.06.19 International Conference of Young Mathematicians, Kyiv, Ukraine
- 18.03.19-22.03.19 Final AMMODIT Conference “Mathematics for life sciences”, Kyiv, Ukraine

- 17.09.18-19.09.18 International Scientific Conference “Modern problems of mathematics and its application in natural sciences and information technologies” in honor of the 50th anniversary of the Faculty of Mathematics and Informatics, Chernivtsi, Ukraine
- 22.05.18-25.05.18 International Conference “Modern Problems of Mechanics and Mathematics” dedicated to 90th anniversary of Ya. S. Pidstryhach, Academician of NASU and 40th anniversary of the Institute for Applied Problems of Mechanics and Mathematics of NASU, Lviv, Ukraine
- 19.03.18-23.03.18 4th AMMODIT Conference, Malekhiv (Lviv region), Ukraine
- 07.06.17-10.06.17 International Conference of Young Mathematicians in honor of the 100th anniversary of Academician of NASU, Prof. Yu. O. Mitropolskiy, Kyiv, Ukraine
- 28.05.17-03.06.17 International Conference “Theory of approximation of functions and its applications” in honor of the 75th anniversary of Alexander Stepanets, Doctor of Sciences, Professor, Corresponding Member of NASU, Slovyansk, Ukraine
- 23.05.17-25.05.17 Conference of Young Scientists “Pidstryhach Readings – 2017”, Lviv, Ukraine
- 22.02.17-25.02.17 All-Ukrainian Scientific Conference “Modern problems of probability theory and mathematical analysis”, Vorokhta, Ukraine
- 26.01.17-30.01.17 3rd Conference “Approximation Methods for Molecular Modelling and Diagnosis Tools” (AMMODIT), Kyiv, Ukraine
- 01.08.16-14.08.16 XI Summer School “Algebra, Topology, Analysis”, Odessa, Ukraine
- 25.05.16-27.05.16 Conference of Young Scientists “Pidstryhach Readings – 2016”, Lviv, Ukraine

Seminar Talks

- 21.06.2024 Research Seminar Function Spaces, Faculty of Mathematics and Computer Science, University of Jena, Germany
- 08.01.2024 Joint seminar of the Technical University of Munich and the Helmholtz Center Munich, Germany
- 10.10.2023 Research seminar Applied Analysis, Institute of Mathematics, Osnabrück University, Germany
- 09.08.2023 Faculty of Mathematics, Chemnitz University of Technology, Germany
- 29.09.2021 Point Distributions Webinar, online
- 09.09.2021 Seminar within the EU Project SOMPATY (“Spectral Optimization: From Mathematics to Physics and Advanced TechnologY”), online
- 13.05.2021 Oles Honchar Dnipro National University, Ukraine
- 04.03.2020 Faculty of Mathematics, Chemnitz University of Technology, Germany
- 28.05.2019 Faculty of Mathematics, Chemnitz University of Technology, Germany
- 28.11.2018 Institute of Mathematics, University of Lübeck, Germany
- 27.09.2018 Taras Shevchenko National University of Kyiv, Ukraine
- Institute of Mathematics of NAS of Ukraine, Ukraine