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Curriculum Vitae

Kateryna Pozharska (Shvai)

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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

12.2021–present	Researcher, Group of Prof. Dr. Anatolii Romanyuk. Institute of Mathematics of the NAS of Ukraine.
09.2022–02.2025	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.
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

2024	The Best Talk Award at the Conference of young scientists "Pidstryhach readings – 2024", Lviv, Ukraine
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; - a 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)

Other contributions

2023	Established the ERASMUS+ partnership for student's exchange between Chemnitz University of Technology and Lesya Ukrainka Volyn National University (for academic years 2023/2024 – 2024–2026).

Membership in associations

2025–present	Member of the Society for Industrial and Applied Mathematics (SIAM).
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.
2019–present	Member of the Marie Curie Alumni Association.
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)	F. Bartel, L. Kämmerer, K. Pozharska, M. Schäfer, T. Ullrich, *Exact discretization, tight frames and recovery via D-optimal designs.* arXiv: arXiv:2412.02489.
	(2)	K. Pozharska, A. Romanyuk, *The best m-term trigonometric approximations of the classes of periodic functions of one and many variables in the space $B_{q,1}$*, Res. Math. 32, No. 2 (2024).
	(3)	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).

(4)   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, 1007-1023 (2024).

(5)   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.

(6)   D. Krieg, K. Pozharska, M. Ullrich, T. Ullrich, *Sampling projections in the uniform norm.* arXiv: 2401.02220.

2023   (7)   D. Krieg, K. Pozharska, M. Ullrich, T. Ullrich, *Sampling recovery in* L_2 *and other norms.* arXiv: 2305.07539.

(8)   A. Romanyuk, V. Romanyuk, K. Pozharska, S. Hembars'ka, *Characteristics of linear and nonlinear approximation of isotropic classes of periodic multivariate functions*, Carpathian Math. Publ. 15, No. 1, 78-94 (2023).

2022   (9)   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).

(10)   O. Shvai, K. Pozharska, *On some approximation properties of Gauss-Weierstrass singular operators*, J. Math. Sci. 260, No. 5, 693–699 (2022).

2021   (11)   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).

(12)   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   (13)   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).

(14)   I. V. Kal'chuk,   YU. I. Kharkevych,   K. V. Pozharska,

6

Asymptotics of approximation of functions by conjugate Poisson integrals, Carpathian Math. Publ. 12, No. 1, 138–147 (2020).

2019   (15)   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).

(16)   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   (17)   K. V. Shvai, *Estimation of the best bilinear approximations for the classes of $(\boldsymbol{\psi}, \boldsymbol{\beta})$-differentiable periodic multivariable functions*, Ukr. Math. J. 70, No. 4, 649–660 (2018).

(18)   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   (19)   K. V. Pozharska, *Estimates of the best M-term trigonometric approximations of the classes $L_{\boldsymbol{\beta},p}^{\psi}$ 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)

(20)   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   (21)   K. V. Shvai, *The best M-term trigonometric approximations of classes of $(\boldsymbol{\psi}, \boldsymbol{\beta})$-differentiable periodic multivariate functions in the space L_q*, J. Num. and Appl. Math. 122, No. 2, 83–91 (2016).

(22)   K. V. Shvai, *Estimates of the best orthogonal trigonometric approximations of the generalized multivariate analogues of Bernoulli kernels and classes $L_{\boldsymbol{\beta},1}^{\psi}$ 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 recommenda-
tions 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

17.01.25-18.01.25   34. Rhein-Ruhr-Workshop über Angewandte Mathematik,
Approximationstheorie und Numerische Mathematik,
Bestwig (Sauerland), Germany

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, Univer-
sity 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 **(by invitation only)**
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