

Dr. Vitalii Marchenko

Curriculum Vitae

*Institute of Mathematics
University of Szczecin
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PhD, Assistant Professor



Education

2006–2010 **Bachelor of Applied Mathematics**, *Karazin Kharkiv National University, Kharkiv, Ukraine, Faculty of Mathematics and Mechanics*

2010–2011 **Master of Applied Mathematics, Second speciality – Teacher, Lecturer of Mathematics and Computer Science**, *Karazin Kharkiv National University, Kharkiv, Ukraine, Faculty of Mathematics and Mechanics*
Diploma magna cum laude

PhD thesis

title *On spectral basis properties of operators of evolution equations*
supervisor Prof. Grigory Sklyar, Institute of Mathematics, University of Szczecin, Poland, Karazin Kharkiv National University, Ukraine
date, place 23 September 2016, Karazin Kharkiv National University, Kharkiv, Ukraine
nostrification 30 December 2021, Nicolas Copernicus University, Torun, Poland

Experience

2011–2015 **Lecturer**, *Karazin Kharkiv National University, Faculty of Mathematics and Mechanics, Kharkiv, Ukraine*

2013–2014 **Junior researcher**, *Karazin Kharkiv National University, Faculty of Mathematics and Mechanics, Kharkiv, Ukraine*

2015–2017 **Junior researcher**, *Mathematical Division, B. Verkin Institute for Low Temperature Physics and Engineering of the National Academy of Sciences of Ukraine, Kharkiv, Ukraine*

2017–2021 **Researcher**, *Mathematical Division, B. Verkin Institute for Low Temperature Physics and Engineering of the National Academy of Sciences of Ukraine, Kharkiv, Ukraine*

Since January 2022 **Senior Researcher**, *Mathematical Division, B. Verkin Institute for Low Temperature Physics and Engineering of the National Academy of Sciences of Ukraine, Kharkiv, Ukraine*

Since October 2022 **Assistant Professor**, *Institute of Mathematics, University of Szczecin, Szczecin, Poland*

Courses taught

Functional analysis
Methods of functional analysis in control theory
Riesz bases
Information technologies
Real analysis
Numerical methods
Computer-aided calculations (Wolfram Mathematica, SageMath)
Probability theory
Stochastic modeling
Introduction to LaTeX

Profiles on the Web

Scopus, Scopus ID 8979049700

Google Scholar, <https://scholar.google.com.ua/citations?user=V8J2u8AAAAAJ&hl=uk>

ResearchGate, https://researchgate.net/profile/Vitalii_Marchenko

Web of Science, ResearcherID Q-8147-2019

ORCID, ORCID iD 0000-0002-5981-1057 <https://orcid.org/0000-0002-5981-1057>

Languages

English	fluent
Polish	intermediate
Ukrainian	native speaker
russian	native speaker

Research interests

Functional Analysis, Operator Theory and Differential Equations, more precisely

- Evolution equations and C_0 -semigroups
- Asymptotic analysis of C_0 -semigroups and C_0 -groups
- Banach spaces, their geometry, Schauder bases and decompositions
- Spectral theory of nonselfadjoint unbounded operators and unbounded operators on Banach spaces
- Spectral methods in an infinite dimensional linear systems theory
- Finite dimensional nonlinear systems

Publications

- [1] V. Marchenko, Isomorphic Schauder decompositions in certain Banach spaces, Open Mathematics (formerly Central European Journal of Mathematics), November 2014, 12(11), pp. 1714-1732.

- [2] V. Marchenko, Schauder-Orlicz decompositions, ℓ_Φ -decompositions and pseudo-Daugavet property, submitted.
- [3] V. Marchenko, Splitting inequalities for differences of exponentials, submitted.
- [4] V. Marchenko, Stability of Riesz bases, Proc. Amer. Math. Soc., August 2018, 146(8), pp. 3345-3351.
- [5] V. Marchenko, Stability of unconditional Schauder decompositions in ℓ_p spaces, Bull. Aust. Math. Soc., December 2015, 92(3), pp. 444-456.
- [6] V. Marchenko, Stability of unconditional Schauder decompositions in Hilbert spaces, Visn. Khark. Univ., Ser. Mat. Prykl. Mat. Mekh., 2014, 70, pp. 103-113.
- [7] V. Marchenko, Symmetrically-spectral operators in ℓ_p ($1 \leq p < \infty$) and c_0 spaces, Visn. Khark. Univ., Ser. Mat. Prykl. Mat. Mekh., 2013, 68, pp. 33-44.
- [8] V. Marchenko, P. Polak, and G. Sklyar, Asymptotic analysis of unbounded C_0 -groups with unbounded generators, submitted.
- [9] G. Sklyar and V. Marchenko, Hardy inequality and the construction of infinitesimal operators with non-basis family of eigenvectors, J. Funct. Analysis, February 2017, 272(3), pp. 1017-1043.
- [10] G. Sklyar and V. Marchenko, Hardy inequality and the construction of the generator of the C_0 -group with eigenvectors not forming a basis, Dopov. Nac. Akad. Nauk Ukr., 2015, 9, pp. 13-17. (in Ukrainian).
- [11] G. Sklyar and V. Marchenko, Resolvent of the generator of the C_0 -group with non-basis family of eigenvectors and sharpness of the XYZ theorem, J. Spectr. Theory, 2021, 11, pp. 369-386.
- [12] G. Sklyar, V. Marchenko, and P. Polak, One class of linearly growing C_0 -groups, J. Math. Phys. Anal. Geom., 2021, 17(4), pp. 509-520.
- [13] G. Sklyar, V. Marchenko, and P. Polak, Sharp polynomial bounds for certain C_0 -groups generated by operators with non-basis family of eigenvectors, J. Funct. Analysis, April 2021, 280(7), 108864.

Conferences and workshops

- 14-15 May **2010, Kharkiv, Ukraine**, *IV Scientific conference of students and PhD students "Contemporary problems of mathematics and its applications to natural sciences and information technologies"*, Contributed talk
- 17-22 April **2011, Kharkiv, Ukraine**, *International Conference "Contemporary problems of mathematics and its applications to natural sciences and information technologies"*, Contributed talk
- 25-26 April **2014, Kharkiv, Ukraine**, *IX International scientific conference of young scientists "Contemporary problems of mathematics and its applications to natural sciences and information technologies"*, Contributed talk

- 16-20 June **2014, Kharkiv, Ukraine**, *II International conference "Analysis and Mathematical Physics"*, Contributed talk
- 24-25 April **2015, Kharkiv, Ukraine**, *X International scientific conference of young scientists "Contemporary problems of mathematics and its applications to natural sciences and information technologies"*, Contributed talk
- 3-6 June **2015, Kyiv, Ukraine**, *International Conference of Young Mathematicians*, Contributed talk
- 8-12 June **2015, Lille, France**, *International Conference "Recent trends in Operator Theory and Function Theory"*
- 15-19 June **2015, Kharkiv, Ukraine**, *III International conference "Analysis and Mathematical Physics"*, Contributed talk
- 22-26 June **2015, Kyiv, Ukraine**, *International Conference "Dynamical Systems and Their Applications"*, Contributed talk
- 25-28 August **2015, Drohobych, Ukraine**, *V.Ya. Skorobohatko International Mathematical Conference*, Contributed talk
- 13-17 June **2016, Kharkiv, Ukraine**, *IV International conference "Analysis and Mathematical Physics"*, Contributed talk
- 18-22 July **2016, Berlin, Germany**, *7th European Congress of Mathematics*, Contributed talk
- 4-15 Sep. **2016, Mainz, Germany**, *A trilateral German-Russian-Ukrainian summer school "Spectral Theory, Differential Equations and Probability"*, Contributed talk
- 26-28 Sep. **2016, Kharkiv, Ukraine**, *International Conference "Differential Equations and Control Theory"*, Contributed talk
- 19-24 June **2017, Kharkiv, Ukraine**, *V International conference "Analysis and Mathematical Physics"*, Poster session
- 14-18 August **2017, Chemnitz, Germany**, *International Workshop on Operator Theory and its Applications*, Contributed talk
- 18-23 Sep. **2017, Lviv, Ukraine**, *International Conference in Functional Analysis dedicated to the 125th anniversary of Stefan Banach*, Contributed talk
- 18-22 June **2018, Kharkiv, Ukraine**, *VI International conference "Analysis and Mathematical Physics"*, Contributed talk
- 2-6 July **2018, Timisoara, Romania**, *27th International Conference in Operator Theory*, Contributed talk
- 25-27 Sep. **2018, Kharkiv, Ukraine**, *3rd International Scientific Conference "Differential Equations and Control Theory"*, Contributed talk
- 23-26 Sep. **2019, Kolobrzeg, Poland**, *4rd International Scientific Conference "Differential Equations and Control Theory"*, Contributed talk
- 27-29 Sep. **2021, Kharkiv, Ukraine**, *5th International Scientific Conference "Differential Equations and Control Theory"*, Contributed talk
- 12-15 May **2022, Ivano-Frankivsk, Ukraine**, *International Online Conference "Current Trends in Abstract and Applied Analysis"*

Visiting positions

Visiting researcher position

- 2020 **Institute of Mathematics, University of Szczecin**, *Part of the project UNIVERSITY 2.0 - CAREER ZONE co-financed by the European Union under the European Social Fund, Measure 3.5 Comprehensive university programs. Axis III Higher education for economy and development, Operational Program Knowledge Education Development 2014 -2020, nr POWR.03.05.00-00-Z064/17-00.*, September 2020

Awards, grants and scholarships

Awards

- 2018 **Gold Medal and Award of Ukraine Mathematics Competition 2017 for the best young Ukrainian mathematicians sponsored by The Shevchenko Scientific Society (USA) and The U.S.-Ukraine Foundation**, *For work "Spectral theory of C_0 -semigroups and stability of Schauder decompositions"*, Award ceremony: 18 May 2018
- 2018 **Prize of the National Academy of Sciences of Ukraine for young scientists for the best scientific works**, *For work "New class of generators of C_0 -groups and Schauder decompositions"*

Scholarships

- 2011 **Scholarship of the N.I. Akhiezer Foundation**
- 2016 **Scholarship of the N.I. Akhiezer Foundation**
- 2016 **Scholarship of the National Academy of Sciences of Ukraine for young scientists**, *for 2 years: September 2016 – September 2018*
- 2020 **Scholarship of the President of Ukraine for young scientists**, *May 2020 – May 2022*

Travel grants

- 2015 **Lille, France**, *Conference "Recent Trends in Operator Theory and Function Theory"*, June 2015, Universite de Lille 1 Sciences et Technologies
- 2016 **Berlin, Germany**, *7th European Congress of Mathematics*, July 2016, Technische Universität Berlin
- 2016 **Mainz, Germany**, *A trilateral German-Ukrainian-Russian summer school "Spectral Theory, Differential Equations and Probability"*, September 2016, Johannes Gutenberg Universität Mainz
- 2017 **Chemnitz, Germany**, *International Workshop on Operator Theory and its Applications IWOTA 2017*, August 2017, Technische Universität Chemnitz
- 2019 **Kolobrzeg, Poland**, *4rd International Scientific Conference "Differential Equations and Control Theory"*, September 2019, University of Szczecin

Grants

- 2015 **Grant of the National Academy of Sciences of Ukraine for young scientists**, *Project "Linear evolution equations in a Hilbert space and the Boltzmann equation"*, June 2015 – December 2016

2018 **Project Leader of the Grant of the State Fund for Fundamental Research of Ukraine for young scientists**, *Project "Operator-differential equations and their applications in problems of physics"* (project no. $\Phi 83/82$ - 2018), July 2018 – December 2018

Refereeing for

since 2018 **Journal of Mathematical Physics, Analysis, Geometry**, Ukraine, Impact Factor 0.692
(8 manuscripts)

since 2018 **Ukrainian Mathematical Journal**, Ukraine, Impact Factor 0.518
(1 manuscript)

since 2019 **Journal of Mathematical Study**, China
(1 manuscript)

since 2020 **AIMS Mathematics**, USA
(1 manuscript)

2020 **The book "Stabilization of distributed parameter systems: design methods and applications" (ICIAM 2019 SEMA SIMAI Springer Series)**, ICIAM 2019, Valencia, Spain, A systematic presentation of recent stabilizability results for control systems with infinite degrees of freedom
(1 chapter)

since 2020 **Advances in Operator Theory**, Switzerland
(1 manuscript)

Reviewing for

since 2023 **Mathematical Reviews**, USA
(2 reviews)

Computer skills

- Wolfram Mathematica
- Maple
- LaTeX, Beamer
- C++
- JavaScript
- SageMath

Membership

- Kharkiv Mathematical Society, since 2016
- Scientific Council of Institute of Mathematics, Szczecin University, since 2023