

K. Marynets
Mathematical Physics



Education

PhD project 'The investigation of nonlinear boundary-value problems with the help of parametrization', Kyiv Taras Shevchenko National University, Ukraine

Nov 2010 → Apr 2013

Award Date: 22 Apr 2013

Specialist degree thesis 'Organization and methodics of accounting, audit of payroll calculations and effectiveness analysis of the payroll fund', Uzhhorod National University

Sept 2009 → Jun 2011

Master thesis 'Parametrization for two-point boundary-value problems with nonlinear boundary conditions', Uzhhorod National University

Sept 2009 → Jun 2010

Bachelor thesis 'Investigation of solutions of the nonlinear three-point boundaryvalue problems of the Cauchy-Nicoletti type', Uzhhorod National University

Sept 2005 → Jun 2009

Employment

Mathematical Physics

Delft University of Technology

1 Jan 2020 → 3 Nov 2055

Postdoctoral researcher

University of Vienna

Vienna, Austria

1 Jan 2018 → 1 Dec 2019

Senior Lecturer

Uzhhorod National University

Uzhhorod, Ukraine

1 May 2016 → 1 Dec 2019

Lecturer

Uzhhorod National University

Uzhhorod, Ukraine

1 Sept 2013 → 1 Apr 2016

Teaching Assistant

Uzhhorod National University

Uzhhorod, Ukraine

1 Sept 2011 → 1 Aug 2013

Research outputs

A numerical Bernstein splines approach for nonlinear initial value problems with Hilfer fractional derivative

Goedegebure, N. & Marynets, K., 2026, In: Mathematics and Computers in Simulation. 250, p. 847-865 19 p.

Existence and uniqueness of stratified Antarctic flows

Chu, J., Marynets, K. & Wang, Z., 2026, In: Applied Mathematics Letters. 177, 5 p., 109883.

Boundary value problems modeling moisture transport in soils

Marynets, V., Marynets, K. & Kohutych, O., 2025, In: Journal of Computational and Applied Mathematics. 465, 14 p., 116597.

Fractional Boundary Value Problems with Parameter-Dependent and Asymptotic Conditions

Marynets, K. & Pantova, D. H., 2025, In: Fractal and Fractional. 9, 7, 23 p., 462.

Generalized fractional operators do not preserve periodicity

Garrappa, R., Górska, K., Kaslik, E. & Marynets, K., 2025, In: Fractional Calculus and Applied Analysis. 28, 4, p. 1681-1705 25 p.

Parameter-dependent fractional boundary value problems: analysis and approximation of solutions

Marynets, K. & Pantova, D., 2025, In: Applicable Analysis. 104, 7, p. 1225-1244 20 p.

Analysis of a Sturm–Liouville Problem Arising in Atmosphere

Marynets, K., 2024, In: Journal of Mathematical Fluid Mechanics. 26, 2, 8 p., 38.

Fractional periodic boundary value and Cauchy problems with Hilfer–Prabhakar operator

Marynets, K. & Tomovski, Ž., 2024, In: Computational and Applied Mathematics. 43, 3, 20 p., 130.

Successive approximations and interval halving for fractional BVPs with integral boundary conditions

Marynets, K. & Pantova, D., 2024, In: Journal of Computational and Applied Mathematics. 436, 20 p., 115361.

Exact solutions for geophysical flows with discontinuous variable density and forcing terms in spherical coordinates

Chu, J., Iulian Martin, C. & Marynets, K., 2023, In: Applicable Analysis. 103 (2024), 4, p. 734-747 14 p.

Existence and approximate solutions of a nonlinear model for the antarctic circumpolar current

Chu, J., Marynets, K. & Wang, Z., 2023, In: Differential and Integral Equations. 36, 7-8, p. 537-558 22 p.

Existence of solutions to the generalized periodic fractional boundary value problem

Fečkan, M., Marynets, K. & Wang, J. R., 2023, In: Mathematical Methods in the Applied Sciences. 46, 11, p. 11971-11982 12 p.

Non-local fractional boundary value problems with applications to predator-prey models

Fečkan, M. & Marynets, K., 2023, In: Electronic Journal of Differential Equations. 2023, 17 p., 58.

Sturm-Liouville Boundary Value Problem for a Sea-Breeze Flow

Marynets, K., 2023, In: Journal of Mathematical Fluid Mechanics. 25, 1, p. 1-7 7 p., 6.

Approximation Approach to the Fractional BVP with the Dirichlet Type Boundary Conditions

Marynets, K. & Pantova, D., 2022, In: Differential Equations and Dynamical Systems. 32 (2024), 4, p. 1047-1066 20 p.

On a novel approach for the investigation and approximation of solutions to the systems of higher order nonlinear PDEs

Marynets, V., Marynets, K. & Kohutych, O., 2022, In: Monatshefte für Mathematik. 200 (2023), 4, p. 835-848 14 p.

Stability analysis of the boundary value problem modeling a two-layer ocean

Marynets, K., 2022, In: Communications on Pure and Applied Analysis. 21, 7, p. 2433-2445 13 p.

Study of the Antarctic Circumpolar Current via the Shallow Water Large Scale Modelling
Marynets, K., 2022, *Floating Offshore Energy Devices - GREENER*. Goldrick, C. M., Huggard, M. & Basu, B. (eds.). Association of American Publishers, p. 81-85 5 p. (Materials Research Proceedings; vol. 20).

Study of the boundary value problems for nonlinear wave equations on domains with a complex structure of the boundary and prehistory

Marynets, V., Marynets, K. & Kohutych, O., Aug 2021, In: *Mathematics*. 9, 16, p. 1-12 1888.

A boundary-value problem arising in the modelling of equatorial wind-drift currents

Marynets, K., 2021, In: *Monatshefte für Mathematik*. 197 (2022), 2, p. 311-317 7 p.

Nonlinear differential equations modeling the Antarctic Circumpolar Current

Chu, J. & Marynets, K., 2021, In: *Journal of Mathematical Fluid Mechanics*. 23, 4, p. 1-9 9 p., 92.

Successive Approximation Technique in the Study of a Nonlinear Fractional Boundary Value Problem

Marynets, K., 2021, In: *Mathematics*. 9, 7, p. 1-19 19 p., 724.

A Sturm–Liouville Problem Arising in the Atmospheric Boundary-Layer Dynamics

Marynets, K., 1 Sept 2020, In: *Journal of Mathematical Fluid Mechanics*. 22, 3, 6 p., 41.

Study of differential equations with exponential nonlinearities via the lower and upper solutions' method

Fečkan, M. & Marynets, K., 8 Jul 2020, In: *Numerical Analysis and Applicable Mathematics*. 1, 2, p. 1-7

A hyperbolic-type azimuthal velocity model for equatorial currents

Marynets, K., 4 Jun 2020, In: *Applicable Analysis*. 101 (2022), 3, p. 1147-1155 9 p.

On one interpolation type fractional boundary–value problem

Marynets, K., 2020, In: *Axioms: SI Fractional Calculus, Wavelets and Fractals*. 9, 1, p. 1-21 21 p., 13.

On the Cauchy–Nicoletti Type Two-Point Boundary-Value Problem for Fractional Differential Systems

Marynets, K., 2020, In: *Differential Equations and Dynamical Systems*. 31 (2023), 4, p. 847-867 21 p.

Solvability analysis of a special type fractional differential system

Marynets, K., 2020, In: *Computational and Applied Mathematics*. 39, 1, 3.

Study of a nonlinear boundary-value problem of geophysical relevance

Marynets, K., 1 Aug 2019, In: *Discrete and Continuous Dynamical Systems- Series A*. 39, 8, p. 4771-4781 11 p.

Periodic boundary value problems for higher-order fractional differential systems

Fečkan, M., Marynets, K. & Wang, J. R., 15 Jul 2019, In: *Mathematical Methods in the Applied Sciences*. 42, 10, p. 3616-3632 17 p.

On the modeling of the flow of the Antarctic Circumpolar Current

Marynets, K., 11 Mar 2019, In: *Monatshefte für Mathematik*. 188, 3, p. 561-565 5 p.

On a two-point boundary-value problem in geophysics

Marynets, K., 17 Feb 2019, In: *Applicable Analysis*. 98, 3, p. 553-560 8 p.

A nonlinear two-point boundary-value problem in geophysics

Marynets, K., 4 Feb 2019, In: *Monatshefte für Mathematik*. 188, 2, p. 287-295 9 p.

The Antarctic Circumpolar Current as a shallow-water asymptotic solution of Euler's equation in spherical coordinates
Marynets, K., 1 Feb 2019, In: Deep-Sea Research Part II: Topical Studies in Oceanography. 160, p. 58-62 5 p.

Stuart-type vortices modeling the Antarctic Circumpolar Current
Marynets, K., 1 Jan 2019, In: Monatshefte für Mathematik.

The modeling of the equatorial undercurrent using the Navier–Stokes equations in rotating spherical coordinates
Marynets, K., 2019, In: Applicable Analysis. 100, 10, p. 2069-2077 9 p.

Approximation approach to periodic BVP for mixed fractional differential systems
Fečkan, M. & Marynets, K., 1 Sept 2018, In: Journal of Computational and Applied Mathematics. 339, p. 208-217 10 p.

A Weighted Sturm–Liouville Problem Related to Ocean Flows
Marynets, K., 1 Sept 2018, In: Journal of Mathematical Fluid Mechanics. 20, 3, p. 929-935 7 p.

Two-point boundary problem for modeling the jet flow of the Antarctic circumpolar current
Marynets, K., 28 Feb 2018, In: Electronic Journal of Differential Equations. 2018, 56.

Applying the stereographic projection to modeling of the flow of the antarctic circumpolar current
Haziot, S. V. & Marynets, K., 1 Jan 2018, In: Oceanography. 31, 3, p. 68-75 8 p.

Approximation approach to periodic BVP for fractional differential systems
Fečkan, M. & Marynets, K., 1 Dec 2017, In: European Physical Journal: Special Topics. 226, 16-18, p. 3681-3692 12 p.

On the construction of the approximate solution of a special type integral boundary value problem
Marynets, K., 1 Jan 2016, In: Electronic Journal of Qualitative Theory of Differential Equations. 2016

Further results on the investigation of solutions of integral boundary value problems
Rontó, M., Varha, Y. & Marynets, K., 1 Jun 2015, In: Tatra Mountains Mathematical Publications. 63, 1, p. 247-267 21 p.

On Goursat–Darboux boundary-value problem for systems of non-linear differential equations of hyperbolic type
Marynets, V. V. & Marynets, K. V., 1 Dec 2013, In: Miskolc Mathematical Notes. 14, 3, p. 1009-1020 12 p.

Parametrization for non-linear problems with integral boundary conditions
Rontó, M. & Marynets, K., 1 Dec 2012, In: Electronic Journal of Qualitative Theory of Differential Equations.

On the parametrization of boundary-value problems with three-point non-linear restrictions
Rontó, M. & Marynets, K., 5 Nov 2012, In: Miskolc Mathematical Notes. 13, 1, p. 91-106 16 p.

On the parametrization of boundary-value problems with two-point nonlinear boundary conditions
Ronto, M. I. & Marynets', K. V., 1 Jan 2012, In: Nonlinear Oscillations. 14, 3, p. 379-413 35 p.

On the parametrization of nonlinear boundary value problems with nonlinear boundary conditions
Marynets, K., 1 Dec 2011, In: Miskolc Mathematical Notes. 12, 2, p. 209-223 15 p.