Ardak Kashkynbayev

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ACADEMIC POSITIONS

Nazarbayev University, Department of Mathematics
Assistant Professor 2017 – current
Boğaziçi University, Electrical and Electronics Engineering Department
Postdoctoral Research Associate 2016 – 2017
Middle East Technical University, Department of Mathematics
Research Assistant 2010 – 2016

EDUCATION

Middle East Technical University, Ankara, Turkey
PhD in Mathematics April 2016
Dissertation Title: "Nonautonomous pitchfork and transcritical bifurcations in impulsive/hybrid systems".
Thesis Supervisor: Professor Marat Akhmet
Bachelor of Science in Elementary Mathematics Education June 2010
Minor in Mathematics June 2010

RESEARCH INTERESTS

Nonlinear Differential Equations, Chaos, Bifurcation, Mathematical Neuroscience, Mathematical Biology, Mathematical Oncology.

PUBLICATIONS

Monograph: Akhmet, M. and Kashkynbayev A., Bifurcation in Autonomous and Nonautonomous Differential Equations with Discontinuities. *Springer & Higher Education Press*, 2017.

Book Chapter: Mizrak O.O., Mizrak C., Kashkynbayev A., Kuang Y. (2020) The Impact of Fractional Differentiation in Terms of Fitting for a Prostate Cancer Model Under Intermittent Androgen Suppression Therapy. In: Dutta H. (eds) Mathematical Modelling in Health, Social and Applied Sciences. *Forum for Interdisciplinary Mathematics. Springer*, Singapore.

Articles: 1. Mizrak, O.O., Mizrak, C., Kashkynbayev, A., and Kuang, Y., Can fractional differentiation improve stability results and data fitting ability of a prostate cancer model under intermittent androgen suppression therapy?, *Chaos, Fractals & Solitons*, 131, Article No 109529, (2020)

2. Akhmet, M.U. and Kashkynbayev, A. Nonautonomous bifurcations in nonlinear impulsive systems, *Differential Equations and Dynamical Systems*, 28, 177–190 (2020)

3. Kashkynbayev, A., Cao, J., and Damiev, Z., Stability analysis for fuzzy SICNNs with time-varying delays, *Advances in Difference Equations*, 2019 No. 384 (2019)

4. Akhmet, M.U., Feckan, M., Fen, M.O. and Kashkynbayev, A., Perturbed Li-Yorke Homoclinic Chaos, *Electron. J. Qual. Theory Differ. Equ.* , 2018, No. 75, 1–18 (2018)

5. Akhmet, M.U., Fen, M.O. and Kashkynbayev, A., Persistence of Li–Yorke chaos in systems with relay, *Electron. J. Qual. Theory Differ. Equ.* , 2017, No. 72, 1–18, (2017)

6. Akhmet, M. and Kashkynbayev, A., Finite-time nonautonomous bifurcation in impulsive systems, *Electron. J. Qual. Theory Differ. Equ., Proc. 10'th Coll. Qualitative Theory of Diff. Equ.*, 2016 No. 1, 1–13, (2016)

7. Akhmet, M.U. and Kashkynbayev, A., Nonautonomous transcritical and pitchfork bifurcations in impulsive systems, *Miskolc Mathematical Notes*, 14 737–748, (2013)

8. Akhmet, M.U. and Kashkynbayev, A., Non-autonomous bifurcation in impulsive systems, *Electronic Journal of Qualitative Theory of Differential Equations*, 74, 1–23, (2013)

GRANTS

Imaging in Seismic Exploration, (Co-PI)
Nazarbayev University Faculty Development Grant 2019 – 2020
Convergence analysis in retarded fuzzy neural networks, (PI)

Nazarbayev University Social Policy Grant 2017 – 2018
Nonautonomous bifurcation in impulsive differential equations, (Investigator)
Middle East Technical University Scientific Research Grant 2013 – 2015

HONORS & AWARDS

B.S. Diploma with Honor 2010
The Prime Minister's Scholarship of Turkey 2005 – 2010
Nippon Foundation Scholarship 2008 – 2012
The Scientific and Technological Research Council of Turkey (TÜBİTAK) Graduate Scholarship 2011 – 2015
Asian Universities Alliance Research Scholarship 2019

SEMINARS TALKS

2017 Stability analysis for Mathematical Neural Networks, Astana, Kazakhstan.
2015 Bifurcation in nonautonomous differential systems, METU, Ankara, Turkey.
2015 Bifurcation in nonautonomous dynamical systems, Nazarbayev University, Astana, Kazakhstan.
2014 Nonautonomous bifurcation in impulsive systems, METU, Ankara, Turkey.
2013 Nonautonomous bifurcation in scalar differential equations, METU, Ankara, Turkey.

INVITED CONFERENCES

2019 International Conference on Actual Problems of Analysis, Differential Equations and Algebra (EMJ-2019), Nur-Sultan, Kazakhstan. Talk: *Perturbed Li-Yorke Homoclinic Chaos.*
2019 Seventh International Conference on Mathematical Modeling and Analysis of Populations in Biological Systems (ICMA VII), Arizona State University, Tempe, US. Talk: *Traveling wave solutions to Glioblastoma Multiforme growth models.*
2018 2nd Summer School on "Mathematical methods in Science and Technology", Almaty, Kazakhstan. Talk: *Stability Analysis for Mathematical Neuroscience.*
2017 The VI Congress of the Turkic World Mathematical Society (TWMS 2017), Astana, Kazakhstan. Talk: *Nonautonomous Bifurcation in Discontinuous Differential Equations.*
2017 International Conference on Differential & Difference Equations and Applications 2017, Amadora, Portugal. Talk: *Nonautonomous bifurcations in differential equations with impulses and piecewise constant arguments.*
2015 10th Colloquium on the Qualitative Theory of Differential Equations, Szeged, Hungary. Talk: *Finite-time nonautonomous bifurcations in impulsive systems.*
2014 The 3rd International Conference on Complex Dynamical Systems and Their Applications: New Mathematical Concepts and Applications in Life Sciences, Ankara, Turkey. Talk: *Non-autonomous transcritical and pitchfork bifurcation in impulsive systems.*
2014 8th Structural Dynamical Systems Workshop: Computational Aspects, Monopoli, Italy. Talk: *Finite-time nonautonomous bifurcations in impulsive systems.*
2014 International Conference on Nonlinear Differential and Difference Equations: Recent Developments and Applications, (ICNDDE) Antalya, Turkey. Talk: *Nonautonomous bifurcations in impulsive systems.*

RESEARCH VISITS

School of Mathematical and Statistical Sciences, Arizona State University, March 14–23, 2018, Tempe, USA.
School of Mathematical Sciences, University of Nottingham, May 3–17, 2018, Nottingham, UK.
School of Mathematics, Southeast University, June 25–30, 2018, Nanjing, China.
Potsdam Institute for Climate Impact Research, July 2–6, 2018, Potsdam, Germany.

PROFESSIONAL ACTIVITIES

Membership: Kazakh Mathematical Society, Society for Industrial and Applied Mathematics (SIAM), The Society for Mathematical Biology.
Department Service: Member of graduate curriculum committee 2018–current, Member of undergraduate curriculum committee 2017–2018
International Scientific Committee Member: V. International Multidisciplinary Congress

of Eurasia, 24–26 July 2018, Barcelona, Spain.
Member of organizing committee: 1st National Workshop on Complex Dynamical Systems and Their Applications, TOBB ETU, Ankara, Turkey, 2012.
Group seminar organizer: Complex Dynamical Systems Seminar Group, METU, Ankara, Turkey, 2015–2016.

ADVISING

MS students at Nazarbayev University: Daiana Azamat (2019) and Meruyert Yeleussinova (2019).

EXTERNAL REVIEWER

Renzi Chen, **M.S. Thesis**, School of Automation, Southeast University, Nanjing, China
Banu Zharas, **M.S. Thesis**, Department of of Mathematics, Nazarbayev University
Aigerim Zholmaganbetova, **M.S. Thesis**, Department of of Mathematics, Nazarbayev University
Akyl Shakir, **Undergraduate Capstone Project**, Department of Mathematics, Nazarbayev University
Aidana Abdikarim, **Undergraduate Capstone Project**, Department of Mathematics, Nazarbayev University

TEACHING

Nazarbayev University, **Spring 2020**: MATH-161 Calculus I, MATH-371 Introduction to Mathematical Biology. **Fall 2019**: MATH 273-Linear Algebra and Applications, MATH471-Nonlinear Differential Equations. **Spring 2019**: MATH-274 Introduction to Differential Equations, MATH-371 Introduction to Mathematical Biology. **Fall 2018**: MATH 273-Linear Algebra and Applications, MATH471-Nonlinear Differential Equations. **Spring 2018**: MATH 273-Linear Algebra and Applications, MATH-274 Introduction to Differential Equations. **Fall 2017**: MATH-273 Linear Algebra and Applications, MATH-109 Mathematical Discovery. **Summer 2017**: MATH-161 Calculus I.
Complex Dynamics Group, METU, **Fall 2013** and **Spring 2014**: Real and Complex Analysis.

PROPOSED COURSES

: MATH-371 Introduction to Mathematical Biology.

REFEREEING

Journal of the Franklin Institute; Discrete & Continuous Dynamical Systems – B; Advances in Difference Equations; Eurasian Mathematical Journal; Turkish Journal of Mathematics; Electronic Journal of General Medicine; KazNU Bulletin. Mathematics, Mechanics, Computer Science Series; INESS – 2018 Conference Proceedings; Punjab University Journal of Mathematics.

COMPUTER SKILLS

Matlab, LaTeX.