

## Curriculum Vitae

**Necati Özdemir, Professor, PhD**

**Department of Mathematics, Balıkesir University**  
**Current research interest: Control Theory,**  
**Fractional Derivative and Optimal Control,**  
**Artificial Neural Networks, Financial Mathematics**

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### Education

1992: Mathematics	Marmara University, Turkey	Bachelor
1997: Mathematics	The University of Warwick, UK	MSc
2000: Applied Mathematics	University of Exeter, UK	PhD

### Experience

1992-1993: Faculty of Arts and Sciences	Yüzüncü Yıl University	Research Assistant
1994-1997: Mathematics Research Centre	The University of Warwick	Research Assistant
1997-2000: School of Mathematical Sciences	University of Exeter	Research Assistant
2001-2012: Faculty of Arts and Sciences	Balıkesir University	Assistant Professor
2012-2018: Faculty of Arts and Sciences	Balıkesir University	Associate professor
2018-Now: Faculty of Arts and Sciences	Balıkesir University	Professor

### Selected Journal Papers

1. Mehmet Yavuz, **Necati Özdemir**, Hacı Mehmet BAŞKONUŞ. Solutions of Partial Differential Equations Using the Fractional Operator Involving Mittag-Leffler Kernel. The European Physical Journal Plus, vol. 133, no. 6, pp. 1–11, **2018**.
2. Mehmet Yavuz, **Necati Özdemir**. European Vanilla Option Pricing Model of Fractional Order without Singular Kernel, Fractal and Fractional, vol. 2, no. 1, pp. 1–11, Jan. **2018**.
3. Mehmet Yavuz, **Necati Özdemir**. A Quantitative Approach to Fractional Option Pricing Problems with Decomposition Series, Konuralp Journal of Mathematics, vol. 6, no. 1, pp. 102–109, **2018**.

4. Mehmet Yavuz, **Necati Özdemir**. Numerical inverse Laplace homotopy technique for fractional heat equations, *Thermal Sciences*, vol. 22, no. 1, pp. 185–194, **2018**.
5. Mehmet Yavuz, **Necati Özdemir**. A Different Approach to the European Option Pricing Model with New Fractional Operator, *Mathematical Modelling of Natural Phenomena*, vol. 13, no. 1, pp. 1–12, **2018**.
6. **Necati Özdemir**, Mehmet Yavuz. Numerical Solution of Fractional Black-Scholes Equation by Using the Multivariate Pade Approximation, *Acta Physica Polonica A.*, vol.132, no. 3, 1050-1053, **2017**.
7. Beyza Billur İskender Eroğlu, Derya Avcı, **Necati Özdemir**. Optimal Control Problem for a Conformable Fractional Heat Conduction Equation, *Acta Physica Polonica A*, vol. 132 no. 3, 658-662, **2017**.
8. Derya Avcı, Beyza Billur İskender Eroğlu, **Necati Özdemir**. Conformable Heat Equation on A Radial Symmetric Plate, *Thermal Science*, vol. 21, no. 2, 819-826, **2017**.
9. Yuriy Povstenko, Derya Avcı, Derya Avcı, Beyza Billur İskender Eroğlu, **Necati Özdemir**. Control of thermal stresses in axisymmetric problems of fractional thermoelasticity for an infinite cylindrical domain, *Thermal Science*, vol. 21, no. 1, 19-28, **2017**.
10. Sakir Sakarya, Mehmet Yavuz, Aslan Deniz Karaoglan, **Necati Özdemir**, Stock Market Index Prediction with Neural Network during Financial Crises: A Review on Bist-100, *Financial Risk and Management Reviews*, vol. 1, no. 2, 53-67, 2015.
11. **Necati Özdemir**, Yuriy Povstenko, Derya Avcı, Derya Avcı, Beyza Billur İskender Eroğlu. Optimal Boundary Control of Thermal Stresses in A Plate Based on Time Fractional Heat Conduction Equation, *Journal of Thermal Stresses*, vol. 37, 969-980, **2014**.
12. **Necati Özdemir**, Derya Avcı. Optimal Control of a Linear Time-Invariant Space-Time Fractional Diffusion Process, *Journal of Vibration and Control*, vol. 20, no. 3, 370-380, 2014.
13. **Necati Özdemir**, Beyza Billur İskender, Nihal Yılmaz Özgür. Complex Valued Neural Network with Mobius Activation Function, *Commun. Nonlinear Sci. Numer. Simul.*, vol. 16, no.12, 4698-4703, 2011.

14. Firat Evirgen, **Necati Özdemir**, "Multistage Adomian Decomposition Method for Solving NLP Problems over a Nonlinear Fractional Dynamical System", *J. Comput. Nonlinear Dynam.*, vol. 6, no.2, 2011.
15. **Necati Özdemir**, Beyza Billur İskender, "Fractional Order Control of Fractional Diffusion Systems Subject to Input Hysteresis", *J. Comput. Nonlinear Dynam.*, 5, 2010.
16. **Necati Özdemir**, Firat Evirgen, "A Dynamic System Approach to Quadratic Programming Problems with Penalty Method", *Bull. Malays. Math. Sci. Soc.*, vol. 33, no. 1, 79-91, 2010.
17. **Necati Ozdemir**, "Digital Variable Sampling Integral Control of Infinite Dimensional Systems Subject to Input Nonlinearity", *IEEE Transactions on Automatic Control*, vol. 54, no. 6, 1357-1362, 2009.
18. **Necati Özdemir**, Derya Karadeniz, Beyza Billur İskender, "Fractional Optimal Control Problem of a Distributed System in Cylindrical Coordinates", *Physics Letters A*, 373, 221-226, (2009).
19. **Necati Özdemir**, Derya Karadeniz, "Fractional Diffusion-Wave Problem in Cylindrical Coordinates", *Physics Letters A*, 372, 5968-5972, 2008.
20. **Necati Özdemir**, Derya Avcı, Beyza Billur İskender, "The Numerical Solutions of Two-Dimensional Space-Time Riesz-Caputo Fractional Diffusion Equation", *IJOCTA*, vol. 1, no.1, 17-26, 2011.
21. **Necati Özdemir**, "Adaptive Sampling Data Integral Control Using Current Error of Infinite dimensional Systems", *Indian J Math.*, vol. 52, no. 1, 217-230, 2010.
22. **Necati Özdemir**, Stuart. Townley, "Integral control by variable sampling based on steady state data", *Automatica*, 39, 135-140, 2003.

## Important Conferences

1. Esmahan Uçar, Derya Avcı and **Necati Özdemir**; Caputo's Fractional Derivative Model of Immune Response to Tumor Growth, International Conference on Applied Mathematics in Engineering (ICAME'18), 27-29 Jun, 2018.
2. Mehmet Yavuz and **Necati Özdemir**; Comparing the Caputo-Fabrizio and Atangana-Baleanu fractional derivative with Laplace Homotopy Perturbation Method, ICCESSEN-2017, October 2017
3. Mehmet Yavuz, **Necati Özdemir**. Numerical Solutions of Fractional Partial Differential Equations by Using Laplace Transform, (MME-2017).
4. Mehmet Yavuz, **Necati Özdemir**. Numerical Solutions of Fractional Partial Differential Equations by Using a New Fractional Derivative, (ICCESSEN-2017)
5. Derya Avcı, Beyza Billur Iskender Eroğlu, **Necati Özdemir**. Conformable Heat Problem in A Cylinder, International Conference on Fractional Differentiation and its Applications, Novi Sad, Serbia, July 18 - 20, 2016, (ICFDA16).
6. Mehmet Yavuz, **Necati Özdemir**, Yeliz Y. Okur. Generalized differential transform method for fractional partial differential equation from finance, International Conference on Fractional Differentiation and its Applications, Novi Sad, Serbia, July 18 - 20, 2016, (ICFDA16).
7. Mehmet Yavuz, Yeliz Y. Okur, **Necati Özdemir**. A Numencal Computation of Fractional Black-Scholes Equation, ICTAMI, Romania, p.45, 17th-20 of September 2015.
8. M. Yavuz, S. Sakarya, Aslan D. Karaoglan, **Necati Özdemir**. Istanbul Stock Exchange (BIST) Index Prediction with Neural Networks During the Financial Crises, 4th International Conference on Engineering Optimization, LISBON, p.5840, 8 - 11 September 2014.
9. **Necati Özdemir**, Yuriy Povstenko, Derya Avcı, Beyza Billur Iskender. Time-fractional boundary optimal control of thermal stresses, NSC 2012 - 4th IEEE International Conference on Nonlinear Science and Complexity, Budapest, Hungary, August 6-11, 141-144, 2012.
10. Beyza Billur Iskender. **Necati Özdemir**, Aslan Deniz Karaoğlu. Tuning of Fractional Order PI/..D $\mu$  controller with Response Surface Methodology, NSC 2012 - 4th IEEE International Conference on Nonlinear Science and Complexity, Budapest, Hungary, August 6-11, 145-149, 2012.
11. **Necati Özdemir**, Beyza Billur Iskender. Modeling and Nonlinear Control of Magnetic Levitation Systems with Hysteresis, Vienna, Austria, ISBN 978-3-901608-35-3, 460-467, 2009.
12. **Necati Özdemir**, Firat Evirgen. A Dynamic System Approach for Solving Nonlinear Programming Problems with Exact Penalty Function, 20th Mini-EURO Conference Continuous Optimization and Knowledge-Based Technologies (EurOPT-2008), Neringa, Lithuania, ISBN 978-9955-28-283-9, May 20-23 (2008).

13. M. Yavuz, S. Sakarya, Aslan D. Karaoglan, **Necati Özdemir**. Istanbul Stock Exchange (BIST) Index Prediction with Neural Networks During the Financial Crises, 4th International Conference on Engineering Optimization, LISBON, p.5840, 8 - 11 September 2014.
14. **Necati Özdemir**, Derya Avcı. Fractional Optimal Control Problem Of An Anomalous Diffusion Process In Complex Plane,, International Conference on Applied Analysis and Algebra, istanbul, Turkey, 29 June-02 July, 2011.
15. **Necati Özdemir**, Beyza Billur Iskender. Energy-Optimal Control of Fractionally Damped Elastic Beam Problem, The 4th IF AC Workshop on Fractional Differentiation and Its Applications, Badajoz, Spain, 18-20 October, 2010.
16. **Necati Özdemir**, Derya, Avcı, Beyza Billur İskender. Analytical And Numerical Solutions Of Two Dimensional Riesz-Partial Fractional Diffusion Equation, Symposium on Fractional Signals and Systems-Lisbon '09, 4-6 November 2009.
17. **Necati Özdemir**, Beyza Billur Iskender. Modeling and Nonlinear Control of Magnetic Levitation Systems with Hysteresis, Vienna, Austria, ISBN 978-3-901608-35-3, 460-467, 2009.
18. **Necati Özdemir**, Fırat Evirgen. A Dynamic System Approach for Solving Nonlinear Programming Problems with Exact Penalty Function, 20th Mini-EURO Conference Continuous Optimization and Knowledge-Based Technologies (EurOPT-2008), Neringa, Lithuania, ISBN 978-9955-28-283-9, May 20-23 (2008).
19. **Necati Özdemir**, Stuart, Townley. Variable sampling integral control of infinite-dimensional systems, Proceeding of the 39th IEEE Conference on Decision and Control, Sydney, Australia, (CDC-2000).
20. **Necati Özdemir**, Stuart, Townley, Adaptive low-gain control of infinite dimensional systems by means of sampling time adaptation, Methods and Models in Automation and Robotics, pp. 63-68, Miedzyzdroje, Poland, 25-29 August 1998.

## **Important Books or Book's Chapters**

1. Derya Avcı, Beyza Billur iskender Eroğlu, **Necati Özdemir**, Conformable Fractional Wave Like Equation on a Radial Symmetric Plate, Artur Babiarz Adam Czornik, Jerzy Klamka, Michal Niezabitowski; Theory and Applications of Non-integer Order Systems, , 8th Conference on Non-integer Order Calculus and Its Applications, Zakopane, Poland, Springer pp 137-146, 2017, ISSN:1876-1119.
2. Beyza Billur İskender, **Necati Özdemir**, Aslan Deniz Karaoglan, Parameter Optimization of Fractional Order PI D  $\mu$  Controller Using Response Surface Methodology, Discontinuity and Complexity in Nonlinear Physical Systems, Springer International Publishing, 2014.

3. Firat Evirgen, **Necati Özdemir**, A Fractional Order Dynamical Trajectory Approach for Optimization Problem with HPM, Springer, Eds. Baleanu, D., Machado, J.A.T., Luo, A.C.J., Fractional Dynamics and Control, ISBN 978-1-4614-0456-9, pp. 145-155, 2012.
4. **Necati Özdemir**, Derya Avcı. Numerical Solution of a Two-Dimensional Anomalous Diffusion Problem, Springer, Eds. Baleanu, D., Machado, J.A.T., Luo, A.C.J., Fractional Dynamics and Control, ISBN 978-1-4614-0456-9, pp. 249-261, 2012.

## Professional Service

- International Conference on Applied Mathematics in Engineering (ICAME18), Co-Chair, 2018,  
J. A. Tenreiro Machado, Polytechnic Institute of Porto, Portugal  
**Necati Özdemir**, Balıkesir University, Turkey  
Dumitru Baleanu, Cankaya University, Turkey
- An international Journal of Optimization and Control: theories & Applications, (IJOCTA), Associate Editor (2011-2017).
- Journal of Balıkesir University Institute of Science and Technology, Editor Board (2015-2017).

## Reviewers of journals, conferences and projects:

- Communications in Nonlinear Science and Numerical Simulations (CNSNS-2011,CNSNS-2012)
- Nonlinear Dynamics, (2009,2014, 2015, 2017)
- IEEE Conference on Decision and Control (IEEE-CDC-2009)
- ASME Design Engineering Technical Conferences (DETC-2009)
- The 2009 Chinese Control and Decision Conference (2009 CCDC)
- Bulletin of the Malaysian Mathematical Sciences Society (2012)
- 8th Conference on Non-integer Order Calculus and its Applications, ICFDA16
- Transactions of the Institute of Measurement and Control (2016)
- Computational and Applied Mathematics, (2017)
- Cogent Economics and Finance (2017)
- Turkish Journal Of Electrical Engineering & Computer Sciences (2017)
- IEEE Transactions on Neural Networks and Learning Systems (2014)
- Journal of Vibration and Control (2016)
- Mathematics in Natural Science (MNS), (2017)