Okan Gerçek

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Personal Profile

Title   : Assoc. Prof. Dr.

Date of Birth   : 1972

Place of Birth   : Çorum, Turkey

Marital Status   : Married (three daughters)

Education

- **PhD**, Department of Mathematics, Yıldız Technical University, 2010, Istanbul, Turkey

- **MS,** Department of Mathematics, Fatih University, 2006, Istanbul, Turkey

- **BS,** Department of Mathematics, Boğaziçi University, 1998, Istanbul, Turkey

- **Formation:** Istanbul University, Teacher Certification Program, 1998, Turkey

- **High School:** Ankara Science High School (**Eighth rank in Turkey** for Science High School Entrance Exam)

- **Secondary School:** Eskişehir Anotalian High School

*PhD Thesis***:** "Difference schemes of nonlocal boundary value problems for elliptic-parabolic differential equations", Yıldız Technical University, (Supervisors: Prof. Dr. Allaberen Ashyralyev, Prof. Dr. Ziya Soyuçok)

*Master Thesis***:** "Nonlocal boundary value problems for elliptic-parabolic differential and difference equations", Fatih University, (Supervisor: Prof. Dr. Allaberen Ashyralyev)

Researh Interests

Mathematical Analysis, Numerical Functional Analysis, Well-posedness of Elliptic-Parabolic Differential Equations, Stability Analysis, Difference Schemes for PDEs, Numerical Analysis, Applied Mathematics, Numerical Analysis, Computational Mathematics, Elementary and High School Mathematics Education, Secondary and High School Mathematical Olympiads, Proof Methods and Actual Mathematics Topics.

Teaching Interests

Analysis, Mathematics for Social Sciences, Linear Algebra, Hilbert Spaces, Computational Mathematics, Ordinary and Partial Differential Equations, Complex Analysis, Numerical Analysis, Computational Mathematics, Functional Analysis, Geometry, Analytic Geometry, Mathematics and Geometry for Secondary and High School Education, Secondary and High School Mathematical Olympiads, Actual Mathematics Topics and Activities, MATLAB.

Publications

(*Note: Please see (https://scholar.google.com) for latest citation information for selected journal information.*)

A. **Papers Published in SCI, SCI-Expanded Journals:**

A1. A. Ashyralyev, **O. Gercek**, "Nonlocal boundary value problems for elliptic-parabolic differential and difference equations", *Discrete Dynamics in Nature and Society,* Vol. 2008, Article ID 904824, 16 pages, 2008, DOI: 10.1155/2008/904824.

A2. A. Ashyralyev, **O. Gercek**, "On second order of accuracy difference scheme of the approximate solution of nonlocal elliptic-parabolic problems", *Abstract and Applied Analysis,* Vol. 2010, Article ID 705172, 17 pages, 2010, DOI: 10.1155/2010/705172.

A3. A. Ashyralyev, **O. Gercek**, "Finite difference method for multipoint nonlocal elliptic-parabolic problems", *Computers & Mathematics with Applications,* Vol. 60, (7), pp. 2043-2052, 2010, DOI: 10.1016/j.camwa.2010.07.044.

A4. A. Ashyralyev, **O. Gercek**, "Numerical solution of nbvp for elliptic-parabolic equations", *AIP Conference Proceedings, Numerical Analysis and Applied Mathematics ICNAAM 2011,* Vol. 1389, pp. 609-612, 2011, DOI: 10.1063/1.3636804.

A5. O. Gercek, "Well-posedness of the first order of accuracy difference scheme for elliptic-parabolic equations in Hölder spaces", *Abstract and Applied Analysis*, Vol. 2012, pp. 1-12, 2012, DOI: 10.1155/2012/237657.

A6. A. Ashyralyev, **O. Gercek**, "On second order of accuracy stable implicit difference scheme for elliptic-parabolic equations", *Abstract and Applied Analysis*, Vol. 2012, pp. 1-13, 2012, DOI: 10.1155/2012/230190.

A7. O. Gercek, E. Zusi, "On the Numerical Solution of a Two Dimensional Elliptic-Parabolic Equation", *AIP Conference Proceedings, Numerical Analysis and Applied Mathematics ICNAAM 2012*, Vol. 1479, pp. 606-610, 2012, DOI: 10.1063/1.4756205.

A8. O. Gercek, A. Ashyralyev, "On a difference scheme of the second order of accuracy for elliptic-parabolic equations", *Boundary Value Problems*, Vol. 2012, No. 80, pp. 1-13, 201, 2012, DOI: 10.1186/1687-2770-2012-80.

A9. O. Gercek, E. Zusi, "On Well-posedness of difference scheme for elliptic-parabolic equations in Hölder spaces without a weight", *AIP Conference Proceedings, International Conference on Analysis and Applied Mathematics ICAAM 2014*, Vol. 1611, pp. 84-88, 2014, DOI: 10.1063/1.4893809.

A10. O. Gercek, E. Zusi, "On the well-posedness of a second order difference scheme for elliptic-parabolic equations in Hölder spaces", *AIP Conference Proceedings, Advancements in Mathematical Sciences AMS 2015*, Vol.1676, pp. (020049)1-4, , DOI: 10.1063/1.4930475.

A11. A. Ashyralyev, **O. Gercek,** E. Zusi, "Numerical Solution of a Two Dimensional Elliptic-Parabolic Equation with Dirichlet-Neumann Condition", *AIP Conference Proceedings, International Conference on Analysis and Applied Mathematics ICAAM 2018*, Vol. 1997, pp. 020046:1-020046:7, 2018

B. Papers Published in International Journals outside of SCI Lists:

B1. A. Ashyralyev, **O. Gercek**, "On multipoint nonlocal elliptic-parabolic difference problems", *Vestnik of Odessa National University Mathematics and Mechanics,* Vol. 15, (19), pp. 135-156, 2010.

B2. A. Ashyralyev, **O. Gercek**, "On numerical solution of multipoint nonlocal elliptic-parabolic equations with neumann condition", *International Journal of Mathematics & Computation,* Vol. 11, (J11), pp. 99-110, 2011.

B3. A. Ashyralyev, **O. Gercek**, "Well-posedness of multipoint elliptic-parabolic differential problems" *Malaysian Journal of Mathematical Sciences*, Vol. 6, No. 1, pp. 123-137, 2012.

B4. A. Ashyralyev, **O. Gercek,** "A note on the second order of accuracy difference scheme for elliptic-parabolic equations in Hölder spaces", *Bulletin of Karaganda University Mathematics series*, No: 3(91), pp. 108-116, 2018

C. Proceedings in International Books:

C1. A. Ashyralyev, **O. Gercek**, "Numerical solution of nonlocal boundary value problems for elliptic-parabolic equations" Further Progress in Analysis, Proceeding of the 6th ISAAC Congress World Scientific, 663-670 pp., Ankara, Turkey, April 2009.

C2. A. Ashyralyev, **O. Gercek**, "A Note on the difference scheme of multipoint nonlocal boundary value problems for elliptic-parabolic equations", 2nd International Symposium on Computing in Science and Engineering (ISCSE2011), 544-545 pp., Aydın, Turkey, June 2011.

D. Others:

Actual Papers:

D1. **Okan Gerçek**, "Matematiğin Gerçek Okyanusundaki İnciler-I: Ezber Bozalım, Farklı Yollardan İspatlayalım, Hodri Meydan", *Kariyer Penceresi*, Vol.5 No:23, pp. 24-27, 2015.

D2. **Okan Gerçek**, "Matematiğin Gerçek Okyanusundaki İnciler-II: Matematiği Yazsam Roman Olurdu", *Kariyer Penceresi*, e-dergi, 2016.

Note: Since the Career Window Magazine *"Kariyer Penceresi"* does not go on, the web page is not active at this time, but you can find the current article list on the site blog titled "Matematiğin Gerçek Okyanusunda İnciler" ("The Pearls of the Real Ocean of Mathematics") which is opened in April 2016 by me. The texts are displayed more than a thousand times in three months and the links are shown below. Also, these articles are being translated and published in English.

E1. Matematiğin Gerçek Okyanusundaki İnciler-I: "Ezber Bozalım, Farklı Yollardan İspatlayalım, Hodri Meydan"
E2. Matematiğin Gerçek Okyanusundaki İnciler II: "Matematiği Yazsam Roman Olurdu"
E3. Matematiği Yazsam Roman Olurdu Köşesi I: Kumsalda Buldum π Sayısını, Birinci Gün"
E4. Matematiği Yazsam Roman Olurdu Köşesi II: Kumsalda Buldum π Sayısını, İkinci Gün"
E5. "Hodri Meydan - Ezber Bozalım, Farklı yollardan İspatlayalım Köşesi II"
E6. The Pearls of the Real Ocean of Mathematics-I: "Let's Break The Frames By Proving From Different Paths, Let Me See If You Can"
E7.The Pearls of the Real Ocean of Mathematics -II: "That Would Be Novel If I Could Write Math"
E8. That would be novel If I could write Math Corner I: "I Found Pi on the Beach, Day 1"
E9. That would be novel If I could write Math Corner II: "I Found Pi on the Beach, Day 2"

Written Chapters of International and National Books

❖ Thomas Kalkülüs Cilt 1, Onikinci Baskı, and G.B. Thomas, M.D. Weir, J.R. Hass (Translation of the book "Thomas' Calculus Twelfth Edition" Translator: Okan Gerçek, Translation Editor: Mustafa Bayram. (Translation of 4. Chapter: Applications of Differentiation), 184-245 pp., Turkey, Pearson, 2011.

❖ Thomas Kalkülüs Cilt 2, Onikinci Baskı, and G.B. Thomas, M.D. Weir, J.R. Hass (Translation of the book "Thomas' Calculus Twelfth Edition" Translator: Okan Gerçek, Translation Editor: Mustafa Bayram. (Translation of 14.1 and 14.2 sections in 14. Chapter: Partial Differentiation), 747-764 pp., Turkey, Pearson, 2011.

Organizing Committee Membership

• First International Conference on Analysis and Applied Mathematics ICAAM 2012, Gümüşhane, Turkey, October 2012, Local Committee.

- Algerian-Turkish International Days on Mathematics 2013, Istanbul, Turkey, September 2013, Local Committee.
- Third International Conference on Analysis and Applied Mathematics ICAAM 2016, Almaty, Kazakhstan, September 2016, International Organizing Committee.
- Fourth International Conference on Engineering, Artificial Intelligence and Applications ISEAIA, Kyrenia, TRNC, November 2016, Executive and Scientific Committee.
- Fifth International Conference on Engineering, Artificial Intelligence and Applications ISEAIA, Kyrenia, TRNC, November 2017, Executive and Scientific Committee.
- Fourth International Conference on Analysis and Applied Mathematics ICAAM 2018, Lefkosa, Mersin 10, Turkey, September 2018, Technical Program Committe

Project

- Principal Investigator, Fatih University Research Fund, Title: "Investigation of nonlocal boundary value problems for elliptic-parabolic equations" (August 2012- August 2014) Three publications and a thesis have been published with master student from this project.

Master and PhD Students

Master:

- Emel Zusi, "On the Numerical Solution of a two dimensional Elliptic-Parabolic Equation", 2013 (Co-supervisor, Joint with Prof. Allaberen Ashyralyev)

PhD:

- İrfan Türk, "On the Numerical Solution of Advection-Diffusion-Reaction Equations with Singular Source Terms", 2016 (Co-supervisor, Joint with Assoc. Prof. Maksat Ashyraliyev)

Courses Taught

- 2005 – 2010: Mathematics I-II, Business Mathematics I-II, Statistics (Vocational School students in the University.

- 2010 – present: Mathematics I-II, Calculus I-II, General Mathematics, Linear Algebra I-II, Math for Economics I-II, Math for Business I-II, Differential Equations, Geometry, Complex Analysis I, MATLAB and MAPLE, MATLAB for Civil Engineers, Green Functions and Applications, Introduction to Hilbert Spaces, Numerical Analysis I-II, Complex Analysis (Turkish, Distance Learning), Mathematical Methods-I, Numerical Solution of Partial Differential Equations (Marine and Vocational School students, Master, PhD graduate students and four different faculties undergraduate students).

Seminer and Events

- "Nonlocal boundary value problem for elliptic-parabolic equation", *Workshop on Differential Equations and Applications*, Middle East Technical University, Ankara/Turkey, 08/02/2007-10/02/2007.
- "On the Wellposedness of the Elliptic-Parabolic Differential Equations", Yıldız Technical University, Istanbul/ Turkey, 14/03/2007.
- "The elliptic-parabolic differential and difference equations", *Bolu Mathematical Days/ Workshop on Numerical Functional Analysis and Applied Mathematics,* Abant İzzet Baysal University, Bolu/Turkey, 09/06/2007 - 10/06/2007.
- "Numerical solution of the nonlocal boundary value problems for elliptic-parabolic equations", *6th International ISAAC Congress*, Middle East Technical University, Ankara/Turkey, 13/08/2007-17/08/2007.
- "Taylor series solution of multi objective linear programming problem", *Workshop on Numerical Functional Analysis II,* Fatih University, Istanbul/ Turkey, 16/12/2007.
- "A Note on Nonlocal Boundary Value Problems", *Workshop on Numerical Functional Analysis II,* Fatih University, Istanbul/ Turkey, 06/11/2008.
- "A note on the nonlocal boundary value problems for elliptic-parabolic difference equations, *International Conference of Mathematical Sciences*, Maltepe University, Istanbul/ Turkey, 07/08/2009.
- "Well-posedness of multipoint elliptic-parabolic differential problems, *International Workshop of Mathematical Analysis 1*, Universiti Putra Malaysia, Kuala Lumpur/Malaysia, 22/06/2010-24/06/2010.
- "On numerical solution of multipoint nonlocal elliptic-parabolic equations, *The 6th International Conference: Dynamical Systems and Applications–2010*, Antalya/Turkey, 10/07/2010-14/07/2010.
- "On multipoint nonlocal elliptic-parabolic difference problems, *International summer mathematical school in memory of V. A. Plotnikov*, Odessa Mechnikov National University, Odessa/Ukraine, 09/08/2010-14/08/2010.
- "A note on the difference scheme of multipoint nonlocal boundary value problems for elliptic-parabolic equations, *2nd International Symposium on Computing in Science & Engineering*, Gediz University, Aydın/Turkey, 01/06/2011-04/06/2011.
- "On a difference scheme of second order of accuracy for elliptic-parabolic equation in a Hilbert space, *International Conference on Applied Analysis and Algebra,* Yıldız Technical University, Istanbul/Turkey, 19/09/2011-25/09/2011.
- "Numerical solution of nbvp for elliptic-parabolic equations, *9th International Conference of Numerical Analysis and Applied Mathematics,* Halkidiki/Greece 19/09/2011-25/09/2011.
- "On the Numerical solution of a two dimensional elliptic-parabolic equation, *10th International Conference of Numerical Analysis and Applied Mathematics,* Kos/Greece 19/09/2012-25/09/2012.
- "Let's discover Pi", *Math Club*, Fatih University, Istanbul/Turkey, 13/3/2015.
- "On the well-posedness of a second order difference scheme for elliptic-parabolic equations in Hölder spaces, *International Conference on Advancements in Mathematical Sciences AMS 2015,* Antalya/Turkey, 05/11/2015-07/11/2015.

- Organizations of educational and cultural activities for the students of Elementary Mathematics Teaching Department (participating in the "this is my work" competition exhibition, seminar talks in different universities with nature trips, organizing math talk weeks, "Pi week" with Math Club in the university, etc) 09/2014-06/2016.
- Activity of "Life and Article Readings" seminars aimed at improving the perspective of students with opening "The Teacher Who Makes Mathematics Enjoyable" Workplace Teaching Room established for the students of Elementary Mathematics Teaching Department 02/2016-06/2016.
- That would be a novel if I could write mathematics corner: I found pi on the beach, *Girne Amerikan Koleji,* Girne/Kuzey Kıbrıs 14/03/2017
- Numerical Solution of a Two Dimensional Elliptic-Parabolic Equation with Dirichlet-Neumann Condition, *International Conference on Analysis and Applied Mathematics ICAAM 2018,* Lefkosa, Mersin 10, Türkiye 06/09/2018-09/09/2018.
- The Misuse of Mathematical Proof Methods: New Approaches and Suggestions, *International Conference on Analysis and Applied Mathematics ICAAM 2018,* Lefkosa, Mersin 10, Türkiye 06/09/2018-09/09/2018.
- If I Could Write Mathematics It Would Be A Novel: A New Approach; Curiosity & Hint ↔ (What ⇔ How ⇔ Why), *International Conference on Analysis and Applied Mathematics ICAAM 2018,* Lefkosa, Mersin 10, Türkiye 06/09/2018-09/09/2018.
- A new different critical approach on the teaching and obtaining of some elementary geometric inequalities, *International Conference on Analysis and Applied Mathematics ICAAM 2018,* Lefkosa, Mersin 10, Türkiye 06/09/2018-09/09/2018.

Honors and Awards

2016 - Coordination of the activity of " Life and Article Readings" seminars aimed at students in the "The Teacher Who Makes Mathematics Enjoyable" Workplace Teaching Room which is established for the students of Elementary Mathematics Teaching Department within the academic year of 2015-2016 and readings of the articles made by the students with a lot of adoption and the Certificate of Appreciation is given for this work.

2014 – Principal director for this University Research Project "Investigation of nonlocal boundary value problems for elliptic-parabolic equations" which was carried out in August 2012 and August 2014, and has published 3 publications and a thesis with his master student so far. The budget 6000 TL (around USD 1700) is given to my master student by University Research Project Fund.

2013 – Istanbul Büyükçekmece District Governorate give Certificate of Appreciation for my contributions as   Member of the Jury, Member of Scientific Committee, Member of the Olympic Second Stage Preparation Commission and Presidency Duties in the Competition of Büyükçekmece District Governorship Mathematics Olympics which was organized by Büyükçekmece District Governorate between the Secondary and High schools covering seven towns in 2008-2013.

2012 – Five publications were published in internationally acclaimed journals in 2012 and three articles of them which were determined A level SCI index according to Article Impact Score at that time by TÜBİTAK ULAKBİM were awarded publication incentive awards by TÜBİTAK and scientific publication incentive program of the University for these articles.

2011 – The Scientific Publication Honor Award, which was awarded to all the faculty members of Fatih University within their academic activities, was presented with the 2010 Academic Year Scientific Publication Honor Award Plaque by the Minister of National Education Mrs Nimet Çubukçu at the 2011 Academic Year Opening Ceremony of the University.

2010 – Three publications published in international journals in 2010 were determined as one of them A level SCI index and two of them B level SCI index by TÜBİTAK ULAKBİM and awarded by TÜBİTAK and scientific publication incentive program of the University for these articles.

2010 – Vocational School Administrator gave Certificate of Appreciation by making the ceremony before passing to Mathematics Department of the Faculty of Science and Education in 2010, due to having the highest academic performance while working as a lecturer at Vocational School of the University between 2005 and 2010.

2008 - The publication published in international journal in 2008 was determined as B level SCI index by TÜBİTAK ULAKBİM and awarded by TÜBİTAK and scientific publication incentive program of the University.

1987 - **Eighth rank** in Turkey for Science High School Entrance Exam.

1986 - Eskisehir Secondary Schools MEB - TED Training Center Exam (7th Class) **first rank** award was given by Mr. Yusuf Sadık, the Director of National Education.

Extra-curricular

- Büyükçekmece District Governorship Mathematics Olympiad for Secondary and High schools, Istanbul, Turkey, Member of the Jury, Member of Scientific Committee, Member of the Olympic Preparation Commission and Presidency Duties (2007-2013).
- Native in Turkish, Fluent in English and Beginner in German.
- Computer programs: Matlab, Maple, Microsoft Office, Scientific Workplace, LATEX
- Refereeing in Filomat, Abstract and Applied Analysis, Boundary Value Problems Journals etc.