

Prof. Mehmet Giyas Sakar

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Address: YYÜ Fen Fakültesi Matematik Bölümü

International Researcher IDs

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Yoksis Researcher ID: 17627

Education Information

Doctorate, Van Yüzüncü Yıl University, Fen Bilimleri Enstitüsü, Matematik, Turkey 2008 - 2012

Postgraduate, Van Yüzüncü Yıl University, Fen Bilimleri Enstitüsü, Matematik, Turkey 2004 - 2007

Undergraduate, Dicle University, Faculty Of Education, Matematik, Turkey 1996 - 2000

Foreign Languages

Russian, B1 Intermediate

English, B2 Upper Intermediate

Dissertations

Doctorate, Kesirli mertebeli diferansiyel denklemlerin analitik ve nümerik çözümleri, Van Yüzüncü Yıl University, Fen Bilimleri Enstitüsü, Matematik, 2012

Postgraduate, Pseudo-parabolik diferansiyel denklemler için fark metotlarında enerji eşitsizlikleri, Van Yüzüncü Yıl University, Fen Bilimleri Enstitüsü, Matematik, 2007

Research Areas

Mathematics, Numerical Analysis, Natural Sciences

Academic Titles / Tasks

Professor, Van Yüzüncü Yıl University, Fen Fakültesi, Matematik Bölümü, 2023 - Continues

Associate Professor, Van Yüzüncü Yıl University, Fen Fakültesi, Matematik Bölümü, 2018 - 2023

Assistant Professor, Van Yüzüncü Yıl University, Fen Fakültesi, Matematik Bölümü, 2013 - 2018

Research Assistant, Van Yüzüncü Yıl University, Fen Fakültesi, Matematik Bölümü, 2005 - 2013

Academic and Administrative Experience

Deputy Head of Department, Van Yüzüncü Yıl University, Fen Fakültesi, Matematik Bölümü, 2022 - Continues

Courses

Fonksiyonel Analiz-II, Undergraduate, 2022 - 2023, 2021 - 2022

Uygulamalı Fonksiyonel Analiz-I, Doctorate, 2022 - 2023

Fonksiyonel Analiz-I, Undergraduate, 2022 - 2023, 2021 - 2022

Nümerik Analiz-II, Undergraduate, 2019 - 2020, 2018 - 2019, 2017 - 2018

Nümerik Analiz-I, Undergraduate, 2019 - 2020, 2018 - 2019, 2017 - 2018

Kompleks Fonksiyonlar Teorisi-II, Undergraduate, 2017 - 2018

Fonksiyonel Analiz-II, Undergraduate, 2016 - 2017, 2015 - 2016

Kesir Mertebeli Diferansiyel Denklemler-II, Postgraduate, 2016 - 2017, 2015 - 2016, 2014 - 2015

Lineer Olmayan Nümerik Analiz-II, Postgraduate, 2016 - 2017, 2015 - 2016, 2014 - 2015

Kompleks fonksiyonlar Teorisi-I, Undergraduate, 2017 - 2018

Matematik, Undergraduate, 2017 - 2018, 2016 - 2017, 2015 - 2016

Kesir Mertebeli Diferansiyel Denklemler-I, Postgraduate, 2016 - 2017, 2014 - 2015

Maple İle Nümerik Analiz, Postgraduate, 2016 - 2017

Lineer Olmayan Nümerik Analiz-I, Postgraduate, 2016 - 2017, 2015 - 2016, 2014 - 2015

Uygulamalı Matematik II, Undergraduate, 2014 - 2015

Fonksiyonel Analiz-I, Undergraduate, 2015 - 2016

Kesir Mertebeli Diferansiyel Denklemler-I, Postgraduate, 2015 - 2016

Uygulamalı Matematik I, Undergraduate, 2014 - 2015

Advising Theses

Sakar M. G., Şenol M., Solutions of fractional differential equations with reproducing kernel Hilbert space method, Doctorate, A.ATA(Student), 2022

Sakar M. G., Kesir mertebeli kısmi diferansiyel denklemlerin homotopi analiz metodu ile nümerik çözümleri, Postgraduate, A.ALKAN(Student), 2019

Sakar M. G., Kesir mertebeli türev içeren bazı kısmi türevli diferansiyel denklemlerin doğuran çekirdeklı Hilbert uzayı metodu ile nümerik çözümlerinin incelenmesi, Doctorate, O.SALDIR(Student), 2018

Sakar M. G., Singüler Pertürbe Özellikli Konveksiyon-Difüzyon Denkleminin Asimptotik Açılmış ve Simplified Reproducing Kernel Hilbert Space Metoduyla Nümerik Çözümleri, Postgraduate, F.AYDIN(Student), 2017

Sakar M. G., Lineer olmayan kesir mertebeli kısmi diferansiyel denklemlerin nümerik çözümü için yeni bir yaklaşım, Postgraduate, B.Hamad(Student), 2016

Published journal articles indexed by SCI, SSCI, and AHCI

- I. An effective approach for numerical solution of linear and nonlinear singular boundary value problems

Saldır O., Sakar M. G.

MATHEMATICAL METHODS IN THE APPLIED SCIENCES, vol.46, no.1, pp.1395-1410, 2023 (SCI-Expanded)

- II. A New Reproducing Kernel Approach for Nonlinear Fractional Three-Point Boundary Value Problems

Sakar M. G., Saldır O.

FRACTAL AND FRACTIONAL, vol.4, no.4, 2020 (SCI-Expanded)

- III. A novel iterative solution for time-fractional Boussinesq equation by reproducing kernel method

Sakar M. G., Saldır O.

- JOURNAL OF APPLIED MATHEMATICS AND COMPUTING, vol.64, no.1-2, pp.227-254, 2020 (SCI-Expanded)
- IV. Numerical Solution of Fractional Order Burgers' Equation with Dirichlet and Neumann Boundary Conditions by Reproducing Kernel Method**
 Saldır O., Sakar M. G., Erdoğan F.
FRACTAL AND FRACTIONAL, vol.4, no.2, 2020 (SCI-Expanded)
- V. Novel design of Morlet wavelet neural network for solving second order Lane-Emden equation**
 Sabir Z., Wahab H. A., Umar M., Sakar M. G., Raja M. A. Z.
MATHEMATICS AND COMPUTERS IN SIMULATION, vol.172, pp.1-14, 2020 (SCI-Expanded)
- VI. Numerical solution of time-fractional Kawahara equation using reproducing kernel method with error estimate**
 Saldır O., Sakar M. G., Erdoğan F.
COMPUTATIONAL & APPLIED MATHEMATICS, vol.38, no.4, 2019 (SCI-Expanded)
- VII. A Novel Technique for Fractional Bagley-Torvik Equation**
 Sakar M. G., Saldır O., AKGÜL A.
PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES INDIA SECTION A-PHYSICAL SCIENCES, vol.89, no.3, pp.539-545, 2019 (SCI-Expanded)
- VIII. An iterative approximation for time-fractional Cahn-Allen equation with reproducing kernel method**
 Sakar M. G., Saldır O., Erdoğan F.
COMPUTATIONAL & APPLIED MATHEMATICS, vol.37, no.5, pp.5951-5964, 2018 (SCI-Expanded)
- IX. Improving Variational Iteration Method with Auxiliary Parameter for Nonlinear Time-Fractional Partial Differential Equations**
 Sakar M. G., Saldır O.
JOURNAL OF OPTIMIZATION THEORY AND APPLICATIONS, vol.174, no.2, pp.530-549, 2017 (SCI-Expanded)
- X. Analytical Approximate Solutions of (n+1)-Dimensional Fractal Heat-Like and Wave-Like Equations**
 Acan O., Baleanu D., Al Qurashi M. M., Sakar M. G.
ENTROPY, vol.19, no.7, 2017 (SCI-Expanded)
- XI. On solutions of fractional Riccati differential equations**
 Sakar M. G., Akgul A., Baleanu D.
ADVANCES IN DIFFERENCE EQUATIONS, 2017 (SCI-Expanded)
- XII. Iterative reproducing kernel Hilbert spaces method for Riccati differential equations**
 Sakar M. G.
JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS, vol.309, pp.163-174, 2017 (SCI-Expanded)
- XIII. Numerical solution of time-fractional nonlinear PDEs with proportional delays by homotopy perturbation method**
 Sakar M. G., Uludağ F., Erdoğan F.
APPLIED MATHEMATICAL MODELLING, vol.40, pp.6639-6649, 2016 (SCI-Expanded)
- XIV. Alternative variational iteration method for solving the time-fractional Fornberg-Whitham equation**
 Sakar M. G., Ergoren H.
APPLIED MATHEMATICAL MODELLING, vol.39, no.14, pp.3972-3979, 2015 (SCI-Expanded)
- XV. The homotopy analysis method for solving the time-fractional Fornberg-Whitham equation and comparison with Adomian's decomposition method**
 Sakar M. G., Erdoğan F.
APPLIED MATHEMATICAL MODELLING, vol.37, pp.8876-8885, 2013 (SCI-Expanded)
- XVI. Variational iteration method for the time-fractional Fornberg-Whitham equation**
 Sakar M. G., Erdoğan F., YILDIRIM A.
COMPUTERS & MATHEMATICS WITH APPLICATIONS, vol.63, no.9, pp.1382-1388, 2012 (SCI-Expanded)

Articles Published in Other Journals

- I. Numerical investigations to design a novel model based on the fifth order system of Emden-Fowler

equations

Zulqurnain S., Sakar M. G., Yeskindirova M., Saldır O.

THEORETICAL AND APPLIED MECHANICS LETTERS, vol.10, no.5, pp.333-342, 2020 (ESCI)

II. A finite difference method on layer-adapted mesh for singularly perturbed delay differential equations

Erdogan F., Sakar M. G., Saldır O.

Applied Mathematics and Nonlinear Sciences , vol.5, no.1, pp.425-436, 2020 (Scopus)

III. A Hybrid Method for Singularly Perturbed Convection-Diffusion Equation

Sakar M. G., Saldır O., Erdogan F.

International Journal of Applied and Computational Mathematics, vol.5, no.5, 2019 (Scopus)

IV. Numerical Solution of Fractional Bratu Type Equations with Legendre Reproducing Kernel Method

Sakar M. G., Saldır O., Akgül A.

International Journal of Applied and Computational Mathematics, vol.4, 2018 (Scopus)

V. A quasilinearization technique for the solution of singularly perturbed delay differential equation

Erdogan F., Sakar M. G.

MATHEMATICS in NATURAL SCIENCE, vol.2, pp.1-7, 2018 (Peer-Reviewed Journal)

VI. Numerical solution of neutral functional-differential equations with proportional delays

Sakar M. G.

AN INTERNATIONAL JOURNAL OF OPTIMIZATION AND CONTROL: THEORIES & APPLICATIONS, vol.7, no.2, pp.186-194, 2017 (Scopus)

Books & Book Chapters

I. Boundary Value Problems for Impulsive Fractional Differential Equations with Nonlocal Conditions

Ergören H., Sakar M. G.

in: Advances in Applied Mathematics and Approximation Theory, Anastassiou, G. A., Duman O., Editor, Springer, London/Berlin , New York, pp.283-297, 2013

Refereed Congress / Symposium Publications in Proceedings

I. Fitted Difference Schemes for Delay Convection-Diffusion Problems with Small Parameter

Erdogan F., SAKAR M. G., Saldır O.

9. International Youth Science Forum Litteris et Artibus, Lviv, Ukraine, 21 - 23 November 2019, pp.65-68

II. LAYER ADAPTED MESHES FOR SINGULARLY PERTURBED CONVECTION-DIFFUSION PROBLEM WITH DELAY

Erdogan F., SAKAR M. G., SALDIR O.

4th International Conference on Computational Mathematics and Engineering Sciences, Antalya, Turkey, 20 - 22 May 2019, pp.148

III. REPRODUCİNG KERNEL METHOD WİTH CHEBYSHEV POLYNOMİALS FOR FRACTİONAL TWO-POINT BOUNDARY VALUE PROBLEM

Sakar M. G., SALDIR O., Erdogan F.

4th International Conference on Computational Mathematics and Engineering Sciences, Antalya, Turkey, 20 - 22 May 2019, pp.200

IV. A NEW NUMERİCAL SOLUTİON FOR SİNGULARLY PERTURBED BOUNDARY VALUE PROBLEMS

SALDIR O., Sakar M. G., Erdogan F.

4th International Conference on Computational Mathematics and Engineering Sciences, Antalya, Turkey, 20 - 22 May 2019, pp.56

V. A numerical approach for time-fractional Kawahara equation with reproducing kernel method

Saldır O., Sakar M. G., Erdogan F.

- 2nd International Conference on Pure and Applied Mathematics (ICPAM-VAN 2018), Van, Turkey, 11 - 13 September 2018, pp.117
- VI. **Reproducing kernel method with Bernstein polynomials for fractional boundary value problems**
Sakar M. G., Saldır O., Erdoğan F.
2nd International Conference on Pure and Applied Mathematics (ICPAM-VAN 2018), Van, Turkey, 11 - 13 September 2018, pp.116
- VII. **An Iterative Approximation for Time-Fractional Clannish Random Walker's Parabolic Equation in Reproducing Kernel Space**
Sakar M. G., Erdoğan F., Saldır O.
7TH INTERNATIONAL EURASIAN CONFERENCE ON MATHEMATICAL SCIENCES AND APPLICATIONS, Kiev, Ukraine, 28 - 31 August 2018, pp.116
- VIII. **Numerical Methods for the Solution of Delay Differential Equations with Small Parameter**
Erdoğan F., Çelik E., Sakar M. G.
7TH INTERNATIONAL EURASIAN CONFERENCE ON MATHEMATICAL SCIENCES AND APPLICATIONS, Kiev, Ukraine, 28 - 31 August 2018, pp.102
- IX. **Reproducing Kernel Method for Time Fractional Allen- Cahn Equation**
Saldır O., Sakar M. G., Erdoğan F.
3rd International Conference on Computational Mathematics and Engineering Sciences, Girne, Cyprus (Kktc), 4 - 06 May 2018, pp.2-3
- X. **Reproducing Kernel Method for Time Fractional Advection equation**
SAKAR M. G., SALDIR O., Erdoğan F.
3rd International Conference on Computational Mathematics and Engineering Sciences, Girne, Cyprus (Kktc), 4 - 06 May 2018, pp.1-3
- XI. **Uniform Difference Schemes for Singularly Perturbed Delay Differential Equations with Delay**
Erdoğan F., Sakar M. G., Saldır O.
3rd International Conference on Computational Mathematics and Engineering Sciences, Girne, Cyprus (Kktc), 4 - 06 May 2018, pp.1-2
- XII. **A Fitted Numerical Method for Singularly Perturbed Integro Differential Equations with Delay**
Erdoğan F., Sakar M. G.
7. International Youth Science Forum Litteris et Artibus, Lviv, Ukraine, 23 - 25 November 2017, pp.422-424
- XIII. **Numerical solution of singularly perturbed convection-diffusion equations**
Sakar M. G., Erdoğan F.
7. International Youth Science Forum Litteris et Artibus, Lviv, Ukraine, 23 - 25 November 2017, pp.425-427
- XIV. **Uniform Numerical Methods for Singularly Perturbed Integro-Differential Equations With Delay**
Erdoğan F., Sakar M. G., Saldır O.
Ukrainian Conference on Applied Mathematics, Lviv, Ukraine, 28 - 30 September 2017, pp.1
- XV. **A new numerical approach for fractional boundary value problems**
Saldır O., Sakar M. G.
Cucasian Mathematics Conference II (CMC II), Van, Turkey, 22 - 24 August 2017, pp.121-122
- XVI. **Higher Order Difference Schemes for Singularly Perturbed Delay Differential Equations with Delay**
Erdoğan F., Sakar M. G., Saldır O.
, The 2st International Symposium on Computational Mathematics and Engineering Sciences, İstanbul, Turkey, 20 - 22 May 2017, pp.1
- XVII. **Non uniform haat wavelet method for singularly perturbed convection diffusion equations**
Sakar M. G., Saldır O., Erdoğan F.
The 2nd International Symposium on Computational Mathematics and Engineering Sciences, İstanbul, Turkey, 20 - 22 May 2017, pp.1
- XVIII. **Legendre Reproducing Kernel Method for Fractional Two Point Boundry Value Problem**
Saldır O., Sakar M. G., Erdoğan F.
The 2nd International Symposium on Computational Mathematics and Engineering Sciences, İstanbul, Turkey, 20 - 22 May 2017, pp.1

- XIX. **An Iterative Reproducing Kernel Method for Time and Space Fractional Burgers Equation**
Saldır O., Sakar M. G.
International Workshop on Mathematical Methods in Engineering, Ankara, Turkey, 27 - 29 April 2017, pp.118
- XX. **A New Technique for Numerical Solution of Fractional BVP's**
Sakar M. G., AKGÜL A., Saldır O.
International Workshop on Mathematical Methods in Engineering, Ankara, Turkey, 27 - 29 April 2017, pp.117
- XXI. **Numerical Solution of Fractional Bratu Type Equation by Legendre-Reproducing Kernel Method**
Sakar M. G., AKGÜL A., Saldır O.
International Workshop on Mathematical Methods in Engineering, Ankara, Turkey, 27 - 29 April 2017, pp.117
- XXII. **Numerical solution of singularly perturbed convection-diffusion problems in the reproducing kernel space**
Sakar M. G.
International Conference on Mathematics and Mathematics Education (ICMME-2016), Elazığ, Turkey, 12 - 14 May 2016, pp.372
- XXIII. **Reproducing kernel method for fractional Riccati differential equations**
Sakar M. G.
The 1st International Symposium on Computational Mathematics & Engineering Sciences, Errachidia, Morocco, 3 - 06 March 2016, pp.48-49
- XXIV. **Numerical solution of fractional Bagley-Torvik equation in the reproducing kernel space**
Sakar M. G.
The 1st International Symposium on Computational Mathematics & Engineering Sciences (CMES-2016), Errachidia, Morocco, 3 - 06 March 2016, pp.24
- XXV. **HOMOTOPY PERTURBATION METHOD FOR TIME-FRACTIONAL PDEs WITH PROPORTIONAL DELAYS**
Saldır O., Sakar M. G.
Mathematical Analysis, Differential Equations and their Applications (MADEA 7), Baku, Azerbaijan, 8 - 13 September 2015, pp.147
- XXVI. **Improving Homotopy Analysis of Method with Residual Error Function for Neutral Functional-Differential Equations with Proportional Delays**
Sakar M. G., ERDOĞAN F., BULUT H.
MADEA-7, Baku, Azerbaijan, 8 - 13 September 2015, pp.147
- XXVII. **A COMBINATION OF VIM AND ASYMPTOTIC EXPANSION FOR SINGULARLY PERTURBED CONVECTION-DIFFUSION PROBLEM**
Saldır O., Sakar M. G.
INTERNATIONAL CONFERENCE ON PURE AND APPLIED MATHEMATICS (ICPAM 2015), Van, Turkey, 25 - 28 August 2015, pp.116
- XXVIII. **A fitted numerov method for singularly perturbed reaction-diffusion equations**
Erdoğan F., SAKAR M. G., SALDIR O.
International Conference on Pure and Applied, Van, Turkey, 25 - 28 August 2015, pp.1
- XXIX. **An exponential fitted method for singularly perturbed reactin-diffusion equations**
SAKAR M. G., Erdogan F., Saldır O.
International Conference on Pure and Applied, Van, Turkey, 25 - 28 August 2015, pp.10
- XXX. **A NEW NUMERICAL APPROACH FOR SOLVING TIME-FRACTIONAL PARTIAL DIFFERENTIAL EQUATIONS**
Sakar M. G., Saldır O.
INTERNATIONAL CONFERENCE ON PURE AND APPLIED MATHEMATICS (ICPAM 2015), Van, Turkey, 25 - 28 August 2015, pp.115
- XXXI. **On the numerical solution of singularly perturbed reaction-diffusion equations**
Saldır O., SAKAR M. G., Erdogan F.
International Conference on Differential and Difference Equations & Applications, Lisbon, Portugal, 18 - 22 May 2015, pp.84
- XXXII. **A new method for solving time fractional partial differential equations**

- Erdoğan F., Yamaç K., SAKAR M. G.
 International Conference on Differential and Difference Equations & Applications, Lisbon, Portugal, 18 - 22 May 2015, pp.74-75
- XXXIII. A novel approach to solution of singularly perturbed convection-diffusion problem**
 Erdoğan F., Yamaç K., SAKAR M. G., Saldır O.
 International Conference on Differential and Difference Equations & Applications, Lisbon, Portugal, 18 - 22 May 2015, pp.106-107
- XXXIV. Numerical Methods on a Shishkin Mesh for Singuarly Perturbed Delay Differential Equations**
 Erdoğan F., Sakar M. G., Saldır O.
 3. INTERNATIONAL EURASIAN CONFERENCE ON MATHEMATICAL SCIENCES AND APPLICATIONS, Vienna, Austria, 25 - 28 August 2014, pp.187
- XXXV. Boundary value problems for impulsive fractional differential equations with non-local conditions**
 Ergören H., Sakar M. G.
 AMAT 2012-International Conference on Applied Mathematics & Approximation Theory, Ankara, Turkey, 17 - 20 May 2012, pp.53
- XXXVI. Alternative variational iteration method to solve the time-fractional Fornberg-Whitham equation**
 Sakar M. G., Ergören H.
 AMAT 2012-International Conference on Applied Mathematics & Approximation Theory, Ankara, Turkey, 17 - 20 May 2012, pp.68

Supported Projects

Sakar M. G., Project Supported by Higher Education Institutions, Numerical Solution of Singularly Perturbed Convection Diffusion Equations, 2017 - 2018

Activities in Scientific Journals

Mathematics in Natural Science (Math. Nat. Sci.), Committee Member, 2016 - Continues
 Nonlinear Science Letters A, Committee Member, 2016 - Continues

Scientific Refereeing

Representation for the reproducing kernel Hilbert space method for a nonlinear system, SCI Journal, December 2017
 A numerical approach based on the reproducing kernel Hilbert space for solving a class of boundary value optimal control problems, SCI Journal, October 2017
 On solutions to the second order partial differential equations by two accurate methods" for Numerical Methods for Partial Differential Equations., SCI Journal, October 2017
 An Accurate Technique for Nonlinear Systems of High-Order Boundary Value Problems, SCI Journal, February 2017
 Homotopy Analysis Method for solving MHD free convection flow from a cooling sheet, Other journals, November 2016
 On the solutions of electrohydrodynamic flow within reproducing kernel method, SCI Journal, November 2016
 The Exact Solutions of The Nonlinear Fractional Partial Differential Equations, Other Indexed Journal, July 2016

Metrics

Publication: 62
 Citation (WoS): 449
 Citation (Scopus): 636
 H-Index (WoS): 10

H-Index (Scopus): 12

Congress and Symposium Activities

7th International Youth Science Forum "Litteris Et Artibus", Attendee, Lviv, Ukraine, 2017

Caucasian Mathematics Conference II, Attendee, Van, Turkey, 2017

The Second International Conference on Computational Mathematics and Engineering Sciences (CMES2017), Attendee, İstanbul, Turkey, 2017

The Second International Conference on Computational Mathematics and Engineering Sciences (CMES2017), Session Moderator, İstanbul, Turkey, 2017

International Workshop on Mathematical Methods in Engineering (MME2017), Attendee, Ankara, Turkey, 2017

International Conference on Mathematics and Mathematics Education (ICMME-2016), Attendee, Elazığ, Turkey, 2016

The 1st International Symposium on Computational Mathematics & Engineering Sciences (CMES-2016), Attendee, Errachidia / Morocco, Morocco, 2016

CMES 2016, Invited Speaker, Miknas, Morocco, 2016

MADEA-7, Attendee, Baku, Azerbaijan, 2015

International Conference on Differential and Difference Equations and Applications 2015, Attendee, Lisboa, Portugal, 2015

Non Academic Experience

Other Public Institution, Milli Eğitim Bakanlığı

MILLI EGITIM BAKANLIGI