

GAMZE YILDIRIM

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International Researcher IDs

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Education

Doctorate
2018 - Continues

Akdeniz University, Institute of Science, Matematik Bölümü, Turkey

Postgraduate
2016 - 2018

Akdeniz University, Institute of Science, Matematik Bölümü, Turkey

Undergraduate
2012 - 2016

Akdeniz University, Faculty Of Science, Department of Mathematics, Turkey

Foreign Languages

English, B2 Upper Intermediate

Dissertations

Postgraduate, Lineer Diferansiyel Denklemlerin Çözümleri İçin Laguerre Kollokasyon Yöntemi , Akdeniz University, Institute of Science, Matematik Bölümü, 2018

Academic Titles / Tasks

Research Assistant
2020 - Continues

Akdeniz University, Institute of Science, Matematik Bölümü

Published journal articles indexed by SCI, SSCI, and AHCI

- Numerical solutions and simulations of the fractional COVID-19 model via Pell–Lucas collocation algorithm**
YILDIRIM G., Yüzbaşı Ş.
Mathematical Methods in the Applied Sciences, vol.47, no.18, pp.14457-14475, 2024 (SCI-Expanded)
- Numerical solutions of SIRD model of Covid-19 by utilizing Pell-Lucas collocation method**

- Yıldırım G., Yüzbaşı Ş.
TURKISH JOURNAL OF MATHEMATICS, vol.48, no.6, pp.1156-1182, 2024 (SCI-Expanded)
3. **A Collocation Technique via Pell-Lucas Polynomials to Solve Fractional Differential Equation Model for HIV/AIDS with Treatment Compartment**
Yıldırım G., Yüzbaşı Ş.
CMES - COMPUTER MODELING IN ENGINEERING AND SCIENCES, vol.141, no.1, pp.281-310, 2024 (SCI-Expanded)
 4. **Numerical solutions of the Bagley-Torvik equation by using generalized functions with fractional powers of Laguerre polynomials**
Yüzbaşı Ş., Yıldırım G.
International Journal of Nonlinear Sciences and Numerical Simulation, vol.24, no.3, pp.1003-1021, 2023 (SCI-Expanded)
 5. **Pell-Lucas collocation method for solving a class of second order nonlinear differential equations with variable delays**
YÜZBAŞI Ş., YILDIRIM G.
TURKISH JOURNAL OF MATHEMATICS, vol.47, no.1, pp.37-55, 2023 (SCI-Expanded)
 6. **A numerical approach to solve hyperbolic telegraph equations via Pell-Lucas polynomials**
YÜZBAŞI Ş., YILDIRIM G.
Journal of Taibah University for Science, vol.17, no.1, 2023 (SCI-Expanded)
 7. **A Pell-Lucas Collocation Approach for an SIR Model on the Spread of the Novel Coronavirus (SARS CoV-2) Pandemic: The Case of Turkey**
Yüzbaşı Ş., Yıldırım G.
MATHEMATICS, vol.11, no.3, pp.697-719, 2023 (SCI-Expanded)
 8. **A collocation method to solve the parabolic-type partial integro-differential equations via Pell-Lucas polynomials**
YÜZBAŞI Ş., YILDIRIM G.
Applied Mathematics and Computation, vol.421, 2022 (SCI-Expanded)
 9. **A Pell-Lucas approximation to solve the Abel equation of the second kind**
YÜZBAŞI Ş., YILDIRIM G.
Ricerche di Matematica, 2022 (SCI-Expanded)
 10. **Legendre Collocation Method to Solve the Riccati Equations with Functional Arguments**
YÜZBAŞI Ş., YILDIRIM G.
INTERNATIONAL JOURNAL OF COMPUTATIONAL METHODS, vol.17, no.10, 2020 (SCI-Expanded)
 11. **Pell-Lucas collocation method to solve high-order linear Fredholm-Volterra integro-differential equations and residual correction**
YÜZBAŞI Ş., YILDIRIM G.
TURKISH JOURNAL OF MATHEMATICS, vol.44, no.4, pp.1065-1091, 2020 (SCI-Expanded)
 12. **Pell-Lucas collocation method for numerical solutions of two population models and residual correction**
YÜZBAŞI Ş., YILDIRIM G.
JOURNAL OF TAIBAH UNIVERSITY FOR SCIENCE, vol.14, no.1, pp.1262-1278, 2020 (SCI-Expanded)

Articles Published in Other Journals

1. **Clique Collocation Method to Solve the Third-Order Multisingular (MS) Functional Differential Equations**
Yıldırım G., Yüzbaşı Ş.
Fundamentals of contemporary mathematical sciences (Online), vol.6, no.1, pp.59-74, 2025 (Peer-Reviewed Journal)
2. **Boubaker Collocation Method for Approximate Solutions of the Model of Pollution for a System of Lakes**

Yıldırım G., Yüzbaşı Ş.

Turkish Journal of Mathematics and Computer Science, vol.16, no.1, pp.240-254, 2024 (Peer-Reviewed Journal)

3. **Pell-Lucas Collocation Method to Solve Second-Order Nonlinear Lane-Emden Type Pantograph Differential Equations**

YÜZBAŞI Ş., YILDIRIM G.

Fundamentals of Contemporary Mathematical Sciences, vol.3, 2022 (Peer-Reviewed Journal)

4. **A Laguerre approach for solving of the systems of linear differential equations and residual improvement**

YÜZBAŞI Ş., YILDIRIM G.

COMPUTATIONAL METHODS FOR DIFFERENTIAL EQUATIONS, vol.9, no.2, pp.553-576, 2021 (ESCI)

5. **Laguerre Collocation Method for Solutions of The Systems of First Order Linear Differential Equations**

YÜZBAŞI Ş., Yıldırım G.

Turkish Journal of Mathematics and Computer Science, vol.10, pp.222-241, 2018 (Peer-Reviewed Journal)

Books

1. **Numerical Solutions of Hantavirus Infection Model by Means of the Bernstein Polynomials**

Yüzbaşı Ş., Yıldırım G.

in: Engineering Cyber-Physical Systems and Critical Infrastructures, D. Jude Hemanth, Tuncay Yigit, Utku Kose, Ugur Guvenc, Editor, Springer Nature, Heidelberg, pp.230-243, 2023

Papers Published in Refereed Scientific Meetings

1. **A collocation method based on Lerch polynomials for solving the Hantavirus infection model**

Yüzbaşı Ş., Yıldırım G.

The 6th Mediterranean International Conference of Pure & Applied Mathematics and Related Areas, Paris, France, 23 - 27 August 2023, pp.195-206

2. **AN OPERATIONAL METHOD FOR SOLVING THE RICCATI DIFFERENTIAL EQUATION BY USING FERMAT POLYNOMIALS**

Yüzbaşı Ş., Yıldırım G.

5. INTERNATIONAL PALANDOKEN SCIENTIFIC STUDIES CONGRESS , Erzurum, Turkey, 18 - 19 March 2023, pp.825-832

3. **A COLLOCATION METHOD BASED ON LERCH POLYNOMIALS TO SOLVE THE PREDATORPREY MODEL**

Yüzbaşı Ş., Yıldırım G.

5. INTERNATIONAL PALANDOKEN SCIENTIFIC STUDIES CONGRESS, Erzurum, Turkey, 18 - 19 March 2023, pp.814-824

4. **NUMERICAL SOLUTION OF THE ABEL DIFFERENTIAL EQUATION BY USING AN OPERATIONAL MATRIX METHOD BASED ON PELL-LUCAS POLYNOMIALS**

Yüzbaşı Ş., Yıldırım G.

4. INTERNATIONAL SCIENTIFIC RESEARCH AND INNOVATION CONGRESS, İstanbul, Turkey, 11 - 12 March 2023, pp.234-242

5. **Approximate Solution Of Logistic Growth Model Via Lerch Collocation Method**

Yüzbaşı Ş., Yıldırım G.

4. INTERNATIONAL SCIENTIFIC RESEARCH AND INNOVATION CONGRESS, İstanbul, Turkey, 11 - 12 March 2023, pp.224-233

6. **AN OPERATIONAL MATRIX METHOD FOR APPROXIMATE SOLUTIONS OF A CLASS OF THE SYSTEM OF THE DIFFERENTIAL EQUATIONS WITH DELAY-TERMS**

Yüzbaşı Ş., Yıldırım G.

- 3 rd International Conference on Applied Engineering and Natural Sciences, Konya, Turkey, 20 - 23 July 2022, pp.349-357
7. **APPROXIMATE SOLUTION OF THE DUFFING EQUATION BY USING FIRST BOUBAKER POLYNOMIALS**
Yüzbaşı Ş., Yıldırım G.
3 rd International Conference on Applied Engineering and Natural Sciences, Konya, Turkey, 20 - 23 July 2022, pp.369-378
8. **AN OPERATIONAL METHOD BASED ON THE FIRST TYPE SHIFTED CHEBYSHEV POLYNOMIALS FOR SOLVING NONLINEAR LANE-EMDEN TYPE FUNCTIONAL DIFFERENTIAL EQUATIONS**
Yüzbaşı Ş., Yıldırım G.
3 rd International Conference on Applied Engineering and Natural Sciences, Konya, Turkey, 20 - 23 July 2022, pp.359-367
9. **FERMAT COLLOCATION APPROACH FOR SOLVING THE PREDATOR-PREY SYSTEM WITH ONE DISCRETE DELAY**
Yüzbaşı Ş., Yıldırım G.
3 rd International Conference on Applied Engineering and Natural Sciences, Konya, Turkey, 20 - 23 July 2022, pp.379-389
10. **BOUBAKER COLLOCATION METHOD FOR APPROXIMATE SOLUTIONS OF THE MODEL OF POLLUTION FOR A SYSTEM OF LAKES**
Yıldırım G., Yüzbaşı Ş.
International Conference on Artificial Intelligence and Applied Mathematics 2022 (ICAIAME 2022), Baku, Azerbaijan, 20 - 22 May 2022, pp.192
11. **NUMERICAL SOLUTIONS OF HANTAVIRUS INFECTION MODEL BY MEANS OF THE GENERALIZED BERNSTEIN POLYNOMIALS**
Yüzbaşı Ş., Yıldırım G.
International Conference on Artificial Intelligence and Applied Mathematics 2022 (ICAIAME 2022), Baku, Azerbaijan, 20 - 22 May 2022, pp.193
12. **An operational method based on the first type shifted Chebyshev polynomials for linear delay differential equations with variable coefficients**
Yüzbaşı Ş., Yıldırım G.
1st International Conference on Engineering and Applied Natural Sciences, Konya, Turkey, 10 - 13 May 2022, pp.2434-2438
13. **Applications of Pell-Lucas collocation method for Bratu-type problem with boundary conditions**
Yüzbaşı Ş., Yıldırım G.
1st International Conference on Engineering and Applied Natural Sciences, Konya, Turkey, 10 - 13 May 2022, pp.2426-2433
14. **An operational matrix method for approximate solutions of mass-spring system with two freedom degree**
Yüzbaşı Ş., Yıldırım G.
1st International Conference on Engineering and Applied Natural Sciences, Konya, Turkey, 10 - 13 May 2022, pp.2439-2443
15. **A NUMERICAL APPROACH TO LANE-EMDEN TYPE FUNCTIONAL DIFFERENTIAL EQUATIONS WITH THE HELP OF AN OPERATIONAL MATRIX METHOD**
Yıldırım G., Yüzbaşı Ş.
13th International Conference of Strategic Research on Scientific Studies and Education (ICoSReSSE), Antalya, Turkey, 26 - 29 May 2021, pp.347-357
16. **PELL-LUCAS COLLOCATION METHOD FOR THE APPROXIMATE SOLUTIONS OF THE SINGULAR TWO-POINT BOUNDARY VALUE PROBLEMS (BVPs)**
Yüzbaşı Ş., Yıldırım G.
13th International Conference of Strategic Research on Scientific Studies and Education (ICoSReSSE), Antalya, Turkey, 26 - 29 May 2021, pp.358-368
17. **APPROXIMATE SOLUTIONS OF SINGULAR PERTURBATED DELAY DIFFERENTIAL EQUATIONS WITH**

THE HELP OF THE LEGENDRE COLLOCATION METHOD

Yüzbaşı Ş., Yıldırım G.

2. INTERNATIONAL CONGRESS ON MATHEMATICS AND GEOMETRY, Ankara, Turkey, 20 May 2021, pp.24-36

18. **APPROXIMATE SOLUTIONS OF THE LANE-EMDEN TYPE DIFFERENTIAL-DIFFERENCE EQUATIONS BY USING FERMAT POLYNOMIALS**

Yüzbaşı Ş., Yıldırım G.

2. INTERNATIONAL CONGRESS ON MATHEMATICS AND GEOMETRY, Ankara, Turkey, 20 May 2021, pp.74-85

19. **AN OPERATIONAL MATRIX METHOD FOR THE APPROXIMATE SOLUTIONS OF THE VISCOUSLY DAMPED SINGLE DEGREE OF FREEDOM SYSTEM SUBJECTED TO HARMONIC EXCITATION**

Yüzbaşı Ş., Yıldırım G.

2. INTERNATIONAL CONGRESS ON MATHEMATICS AND GEOMETRY, Ankara, Turkey, 20 May 2021, pp.48-58

20. **THE APPROXIMATE SOLUTIONS OF THE FREEDOM VIBRATION EQUATIONS OF THE MASS-SPRING SYSTEM WITH TWO FREEDOM DEGREE: PELL-LUCAS MATRIX METHOD**

Yıldırım G., Yüzbaşı Ş.

2. INTERNATIONAL CONGRESS ON MATHEMATICS AND GEOMETRY, Ankara, Turkey, 20 May 2021, pp.59-73

21. **APPROXIMATE SOLUTIONS OF THE NONLINEAR LANE-EMDEN DIFFERENTIAL EQUATIONS USING AN OPERATIONAL MATRIX METHOD**

Yıldırım G., Yüzbaşı Ş.

2. INTERNATIONAL CONGRESS ON MATHEMATICS AND GEOMETRY, Ankara, Turkey, 20 May 2021, pp.37-47

22. **A COLLOCATION METHOD FOR THE APPROXIMATE SOLUTION OF LINEAR NEUTRAL DELAYED DIFFERENTIAL EQUATIONS WITH VARIABLE COEFFICIENT**

Yıldırım G., Yüzbaşı Ş.

AL-FARABI INTERNATIONAL CONGRESS ON APPLIED SCIENCES-II, Nakhchivan, Azerbaijan, 2 - 04 May 2021, pp.150-159

23. **AN OPERATIONAL MATRIX METHOD FOR NUMERICAL SOLUTIONS OF SINGULARLY PERTURBATED DIFFERENTIAL EQUATIONS**

Yüzbaşı Ş., Yıldırım G.

AL-FARABI INTERNATIONAL CONGRESS ON APPLIED SCIENCES - II, Nakhchivan, Azerbaijan, 2 - 04 May 2021, pp.139-149

24. **APPROXIMATE SOLUTIONS OF SINGULAR PERTURBATED DELAY DIFFERENTIAL EQUATIONS WITH THE HELP OF THE BERNSTEIN COLLOCATION METHOD**

Yüzbaşı Ş., Yıldırım G.

AL-FARABI INTERNATIONAL CONGRESS ON APPLIED SCIENCES-II, Nakhchivan, Azerbaijan, 2 - 04 May 2021, pp.160-169

25. **NUMERICAL SOLUTIONS OF THE LINEAR LANE-EMDEN DIFFERENTIAL EQUATIONS BY USING THE MORGAN-VOYCE FUNCTIONS AND RESIDUAL CORRECTIONS**

YILDIRIM G., YÜZBAŞI Ş.

1.INTERNATIONAL CONGRESSON MATHEMATICS AND GEOMETRY, Ankara, Turkey, 09 December 2020, pp.17-31

26. **AN OPERATIONAL MATRIX METHOD FOR THE SYSTEMS OF HIGHER-ORDER LINEAR FREDHOLM INTEGRO-DIFFERENTIAL EQUATIONS BY USING THE PELLUCAS FUNCTIONS**

YÜZBAŞI Ş., YILDIRIM G.

1.INTERNATIONAL CONGRESSON MATHEMATICS AND GEOMETRY, Ankara, Turkey, 09 December 2020, pp.32-46

27. **An operational matrix method based on Chebyshev polynomials for approximate solutions of systems of higher order linear Fredholm integro-differential equations**

YÜZBAŞI Ş., YILDIRIM G.

TURK-COSE 2020, Nur-Sultan, Kazakhstan, 14 - 15 November 2020, pp.54-67

28. **Pell-Lucas collocation method and residual error estimation for the Lane–Emden differential equations**

YÜZBAŞI Ş., YILDIRIM G.

TURK-COSE 2020, Nur-Sultan, Kazakhstan, 14 - 15 November 2020, pp.137-149

29. **BESSEL COLLOCATION METHOD FOR SOLVING FIRST ORDER DIFFERENTIAL EQUATIONS WITH**

VARIABLE DELAYS

YÜZBAŞI Ş., Yıldırım G.

5 th International Congress on Multidisciplinary Studies, Antalya, Turkey, 2 - 03 November 2018, vol.1, pp.110-129

30. Laguerre Polynomial Solutions Of Systems Of Multi-Pantograph Equations

YÜZBAŞI Ş., Yıldırım G.

Türk Akademik Araştırmalar Dergisi Uluslararası Multidisipliner Kongresi (TARRC), Antalya, Turkey, 12 - 14 October 2018, pp.163-164

31. Laguerre Collocation Method for Solutions of Systems of Linear Differential equations

YÜZBAŞI Ş., YILDIRIM G.

International Conference on Mathematics and Mathematics Education (ICMME-2018), Ordu, Turkey, 27 - 29 June 2018, pp.311-312

32. Bessel collocation method to determinate the curves of constant breadth according to Bishop Frame in Euclidean 3-space

YÜZBAŞI Ş., Yıldırım G.

15th International Geometry Symposium, Amasya, Turkey, 03 July 2017, pp.86

Metrics

Publication: 61

Citation (WoS): 39

Citation (Scopus): 31

H-Index (WoS): 4

H-Index (Scopus): 3

Congress and Symposium Activities

The 6th Mediterranean International Conference of Pure & Applied Mathematics and Related Areas (MICOPAM 2023), Attendee, Paris, France, 2023

5. INTERNATIONAL PALANDOKEN SCIENTIFIC STUDIES CONGRESS, Attendee, Erzurum, Turkey, 2023

4. INTERNATIONAL MARMARA SCIENTIFIC RESEARCH AND INNOVATION CONGRESS, Attendee, İstanbul, Turkey, 2023

3 rd International Conference on Applied Engineering and Natural Sciences, Attendee, Konya, Turkey, 2022

1st International Conference on Engineering and Applied Natural Sciences, Attendee, Konya, Turkey, 2022

13th International Conference of Strategic Research on Scientific Studies and Education (ICoSRsSE), Attendee, Antalya, Turkey, 2021

2.INTERNATIONAL CONGRESS ON MATHEMATICS AND GEOMETRY, Attendee, Ankara, Turkey, 2021

AL-FARABI INTERNATIONAL CONGRESS ON APPLIED SCIENCES - II, Attendee, Nakhchivan, Azerbaijan, 2021

1.INTERNATIONAL CONGRESSON MATHEMATICS AND GEOMETRY, Attendee, Ankara, Turkey, 2020

TURK-COSE 2020, Attendee, Astana, Kazakhstan, 2020

5 th International Congress on Multidisciplinary Studies, Attendee, Antalya, Turkey, 2018

Türk Akademik Araştırmalar Dergisi Uluslararası Multidisipliner Kongresi (TARRC), Attendee, Antalya, Turkey, 2018

International Conference on Mathematics and Mathematics Education (ICMME-2018), Attendee, Ordu, Turkey, 2018

15th International Geometry Symposium, Attendee, Amasya, Turkey, 2017

Research Areas

Mathematics, Differential Equations, Integral Equations, Special Functions, Numerical Analysis, Natural Sciences