

## Asst. Prof. Merve Grbz aldađ

### Personal Information

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### International Researcher IDs

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Publons / Web Of Science ResearcherID: HLG-7277-2023

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### Education Information

Doctorate, Middle East Technical University, Graduate School Of Natural And Applied Sciences, Graduate School Of Natural And Applied Sciences, Turkey 2012 - 2017

Undergraduate, Middle East Technical University, Faculty Of Arts And Sciences, Department Of Mathematics, Turkey 2007 - 2012

### Research Areas

Mathematics, Numerical Analysis

### Academic Titles / Tasks

Assistant Professor, TED University, Faculty of Arts and Sciences, Mathematics, 2022 - Continues

Assistant Professor, Baskent University, Faculty of Economics and Administrative Sciences, department of management, 2018 - 2023

### Academic and Administrative Experience

Deputy Head of Department, Baskent University, Faculty of Economics and Administrative Sciences, department of management, 2020 - 2022

### Courses

#### Undergraduate

Advanced Calculus II, Undergraduate, 2022 - 2023

Introduction to Probability Theory, Undergraduate, 2022 - 2023

Advanced Calculus II, Undergraduate, 2023 - 2024, 2022 - 2023

Differential Equations, Undergraduate, 2023 - 2024, 2021 - 2022

Linear Algebra I, Undergraduate, 2022 - 2023

## **Published journal articles indexed by SCI, SSCI, and AHCI**

- I. **Modeling on magnetohydrodynamic Stokes flow using machine learning and curve fitting**  
Gürbüz Çaldağ M., Pekmen B.  
Neural Computing and Applications, 2025 (SCI-Expanded)
- II. **Solution of MHD-stokes flow in an L-shaped cavity with a local RBF-supported finite difference**  
Çelik E., Gürbüz Çaldağ M.  
Engineering Analysis with Boundary Elements, vol.158, pp.356-363, 2024 (SCI-Expanded)
- III. **Streamline analysis of MHD flow in a double lid-driven cavity**  
ÇELİK E., Gürbüz Çaldağ M.  
Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science, vol.238, no.1, pp.64-74, 2024 (SCI-Expanded)
- IV. **Stokes flow in lid-driven cavity under inclined magnetic field**  
Gurbuz-Caldag M., Celik E.  
ARCHIVES OF MECHANICS, vol.74, no.6, pp.549-564, 2022 (SCI-Expanded)
- V. **NUMERICAL STABILITY OF RBF APPROXIMATION FOR UNSTEADY MHD FLOW EQUATIONS**  
Gurbuz M., Tezer-Sezgin M.  
APPLIED AND COMPUTATIONAL MATHEMATICS, vol.18, no.2, pp.123-134, 2019 (SCI-Expanded)
- VI. **MHD Stokes flow and heat transfer in a lid-driven square cavity under horizontal magnetic field**  
Gürbüz M., TEZER M.  
Mathematical Methods in the Applied Sciences, vol.41, no.6, pp.2350-2359, 2018 (SCI-Expanded)
- VII. **MHD convection flow in a constricted channel**  
TEZER M., Gürbüz M.  
Analele Stiintifice ale Universitatii Ovidius Constanta, Seria Matematica, vol.26, no.2, pp.267-283, 2018 (SCI-Expanded)

## **Articles Published in Other Journals**

- I. **A machine learning investigation on MHD duct flow**  
Gürbüz Çaldağ M., Pekmen B.  
International Journal of Dynamics and Control, vol.13, no.2, 2025 (Scopus)
- II. **The Impact of Inclined Magnetic Field on Streamlines in a Constricted Lid-Driven Cavity**  
Çaldağ M., Çelik E.  
SAKARYA UNIVERSITY JOURNAL OF SCIENCE, vol.28, no.1, pp.108-116, 2024 (Peer-Reviewed Journal)
- III. **RBF SOLUTION OF MHD STOKES FLOW AND MHD FLOW IN A CONSTRICTED ENCLOSURE**  
GÜRBÜZ M., TEZER M.  
Turkish World Mathematical Society Journal of Applied and Engineering Mathematics, vol.11, no.1, pp.203-215, 2021 (Scopus)
- IV. **Numerical Solution of MHD Incompressible Convection Flow in Channels**  
GÜRBÜZ M., TEZER M.  
European Journal of Computational Mechanics, vol.28, no.5, pp.411-432, 2019 (Scopus)
- V. **Numerical solution and stability analysis of transient MHD duct flow**  
TEZER M., GÜRBÜZ M.  
Balıkesir Üniversitesi Fen Bilimleri Enstitüsü Dergisi, vol.20, no.3, pp.53-61, 2018 (Peer-Reviewed Journal)
- VI. **MHD Stokes flow in lid-driven cavity and backward-facing step channel**  
GÜRBÜZ M., TEZER M.  
European Journal of Computational Mechanics, vol.24, no.6, pp.279-301, 2015 (ESCI)

## **Books**

- I. **Biological and Medical Models and Applications / Solution of MHD Flow with BEM Using Direct**

## **Radial Basis Function Interpolation**

GÜRBÜZ M., TEZER M.

in: Progress in Industrial Mathematics at ECMI 2018 , Istvan Farago, Ferenc Izsak, Peter L. Simon, Editor, Springer, pp.269-275, 2019

## **Papers Published in Refereed Scientific Meetings**

- I. **A Machine Learning Approach of MHD Stokes Flow in a Lid-Driven Cavity**  
Gürbüz Çaldağ M., Pekmen B.  
10th International Conference on Control, Decision and Information Technologies CoDIT 2024, Valletta, Malta, 1 - 04 July 2024, pp.1-4
- II. **RBF Approximation of Fe<sub>3</sub>O<sub>4</sub>-Water Nanofluid containing Magnetotactic Bacteria**  
Gürbüz Çaldağ M., Pekmen B.  
The Third International Conference on Applied Mathematics in Engineering ICAME'24, Balıkesir, Turkey, 26 - 28 June 2024, pp.58
- III. **RBF Solution of MHD Flow and Heat Transfer with Hall and Viscosity Parameters**  
GÜRBÜZ ÇALDAĞ M.  
6th International Conferences on Science and Technology Natural Science and Technology ICONST-NST 2023, Budva, Montenegro, 30 August - 01 September 2023, pp.8
- IV. **RBF SOLUTIONS OF STEADY FLOW IN A DOUBLE LID-DRIVEN CAVITY EXPOSED TO MAGNETIC FIELD**  
ÇELİK E., GÜRBÜZ ÇALDAĞ M.  
10th International Congress on Fundamental and Applied Sciences, İstanbul, Turkey, 6 - 08 June 2023
- V. **MHD Flow in a Constricted Lid-driven Cavity**  
GÜRBÜZ ÇALDAĞ M., ÇELİK E.  
5th International E-Conference on Mathematical Advances and Applications ICOMAA 2022, İstanbul, Turkey, 11 May 2022, pp.131
- VI. **IMPACTS OF INCLINED MAGNETIC FIELD ON STOKES FLOW**  
GÜRBÜZ ÇALDAĞ M., ÇELİK E.  
8th International Congress on Fundamental and Applied Sciences 2021 (ICFAS2021), Antalya, Turkey, 19 October 2021, pp.1143
- VII. **RBF Solution of MHD Flow in a Square Duct**  
GÜRBÜZ M.  
International Conference on Applied Mathematics in Engineering ICAME'21, Balıkesir, Turkey, 01 September 2021, pp.33
- VIII. **RBF Solution of the Natural Convection Flow of Micropolar Fluids**  
GÜRBÜZ M., TEZER M.  
International Conference on Boundary Element and Meshless Techniques BeTeq 2019, 22 - 24 July 2019
- IX. **RBF Solution of MHD Convection Flow in a Lid-driven Cavity with an Obstacle**  
GÜRBÜZ M., TEZER M.  
Numerical Analysis and Computational Fluid Dynamics: Workshop in Honor of Münevver Tezer-Sezgin's 67th Birthday, Ankara, Turkey, 19 - 20 April 2019
- X. **Stability Analysis of Time Dependent MHD Flow Equations in a Rectangular Duct**  
GÜRBÜZ M., TEZER M.  
BEYOND: Workshop on Computational Science and Engineering, Ankara, Turkey, 20 - 21 October 2018
- XI. **Stability of Unsteady MHD Flow in a Rectangular Duct**  
TEZER M., GÜRBÜZ M.  
International Conference on Applied Mathematics in Engineering ICAME 2018, Balıkesir, Turkey, 27 - 29 June 2018, pp.35
- XII. **Numerical Modelling of MHD Convection Flow in Cavities**  
GÜRBÜZ M., TEZER M.

International Conference on Applied Mathematics in Engineering ICAME 2018, Balıkesir, Turkey, 27 - 29 June 2018, pp.34

XIII. **Solution of MHD Flow with BEM Using Direct Radial Basis Function Interpolation**

GÜRBÜZ M., TEZER M.

20th European Conference on Mathematics for Industry ECMI 2018, Budapest, Hungary, 18 - 22 June 2018, pp.370

XIV. **Numerical Stability of RBF Approximation for Unsteady MHD Flow Equations**

GÜRBÜZ M., TEZER M.

International Conference on Applied Analysis and Mathematical Modeling ICAAMM 2017, İstanbul, Turkey, 3 - 07 July 2017, pp.135

XV. **Numerical stability of RBF solution for unsteady full MHD flow equations**

GÜRBÜZ M., TEZER M.

International Workshop on Mathematical Methods in Engineering MME 2017, Ankara, Turkey, 27 - 29 April 2017, pp.77

XVI. **MHD Convection Flow in a Constricted Channel**

TEZER M., GÜRBÜZ M.

Eleventh Workshop On Mathematical Modelling of Environmental and Life Sciences Problems MMELSP 2016, Köstence, Romania, 12 - 16 October 2016, pp.28-29

XVII. **RBF solution of incompressible MHD convection flow in a pipe**

GÜRBÜZ M., TEZER M.

Eleventh Workshop On Mathematical Modelling of Environmental and Life Sciences Problems MMELSP 2016, Köstence, Romania, 12 - 16 October 2016, pp.16

XVIII. **MHD Stokes flow in a smoothly constricted rectangular enclosure**

GÜRBÜZ M., TEZER M.

International Conference on Boundary Element and Meshless Techniques BETEQ 2016, Ankara, Turkey, 11 - 13 July 2016, pp.73-78

XIX. **Natural convection MHD Stokes flow in a square cavity**

GÜRBÜZ M., TEZER M.

the 16th International Conference on Computational and Mathematical Methods in Science and Engineering CMMSE 2016, Cadiz, Spain, 4 - 09 July 2016, pp.615-623

XX. **RBF solution of convective heat transfer MHD flow**

GÜRBÜZ M.

III. Kadın Matematikçiler Derneği Çalıştayı, İzmir, Turkey, 27 - 29 May 2016, pp.39

XXI. **Lid-driven cavity and backward-facing step Stokes flow under an applied magnetic field**

GÜRBÜZ M., TEZER M.

Tenth UK Conference On Boundary Integral Methods UKBIM 2015, Brighton, England, 13 - 14 July 2015, pp.66-75

XXII. **Two-dimensional Stokes flow of an electrically conducting fluid in a channel under uniform magnetic field**

GÜRBÜZ M., TEZER M.

International Conference on Boundary Element and Meshless Techniques BETEQ 2015, Valencia, Spain, 6 - 08 July 2015, pp.126-131