SUZAN CİVAL BURANAY
PROFESSOR DR.

E-mail: suzan.buranay@emu.edu.tr

Address: Eastern Mediterranean University, 99628, Famagusta, North Cyprus, via Mersin 10 Turkey



Education

PHD 03.10.2007	EASTERN MEDITERRANEAN UNIVERSITY MATEMATİK
MS 01.01.1995	EASTERN MEDITERRANEAN UNIVERSITY UYGULAMALI MAT. VE BİL. BİLİMLERİ
BS 15.07.1993	EASTERN MEDITERRANEAN UNIVERSITY UYGULAMALI MAT. VE BİL. BİLİMLERİ

Academic Titles/Tasks

Profesör 01.03.2023	Eastern Mediterranean University MATHEMATICS
Doçent 01.06.2017 28.03.2023	Eastern Mediterranean University MATHEMATICS
Yardımcı Doçent 16.09.2013 31.05.2017	Eastern Mediterranean University MATHEMATICS

Administrative Duties

FACULTY MEMBER 16.09.2013	Eastern Mediterranean University MATHEMATICS
CHAIR 22.12.2025 22.12.2028	Eastern Mediterranean University MATHEMATICS
CHAIR 10.07.2025 21.12.2025	Eastern Mediterranean University MATHEMATICS
FACULTY BOARD REPRESENTATIVE 30.11.2018 30.11.2020	Eastern Mediterranean University FACULTY OF ARTS AND SCIENCES

M.S. Thesis

1. MEHMET GÜVEN (2026). Collocation Methods for Volterra Integro-Differential Equations.[Master Thesis ,Eastern Mediterranian University].
2. MARWAH JAMEEL A. ALZEADAT (2026). On the Analysis of Solution of psi-Caputo Fractional Logistic Equation.[Master Thesis ,Eastern Mediterranian University].
3. BEWAR SULAIMAN ABDI HAJAN (2016). Accelerated Overrelaxation Method for the Solution of Discrete Laplace's equation on a Rectangle.[Master Thesis ,Eastern Mediterranian University].
4. DAMILOLA VICTORIA ADEKANMBI (2016). On A Comparative Study of Direct Solution Methods of the Discrete Poisson's Equation on A Rectangle.[Master Thesis ,Eastern Mediterranian University].
5. SORAN JALAL ABDALLA (2014). Approximate Methods of Inverse Preconditioners for Solving the Linear Algebraic Systems.[Master Thesis ,Eastern Mediterranian University].

PhD. Thesis

1. MTEMA JAMES CHIN (2025). Collocation Method for Solving Problems of Generalized Fractional Bagley-Torvik Equation.[PhD Thesis ,Eastern Mediterranian University].
2. SARA SAFARZADEH FALAHHESAR (2022). Numerical Solution of Volterra Integral Equations by using Some Positive Operators.[PhD Thesis ,Eastern Mediterranian University].
3. AHMED HERSI MOHAMED MATAN (2022). Highly Accurate Implicit Schemes using Hexagonal Grids for the Approximation of the Derivatives of the Solution of Two Dimensional Heat Equation.[PhD Thesis ,Eastern Mediterranian University].
4. NOUMAN ARSHAD (2020). Hexagonal Grid for Approximation of the Solution of Two Dimensional Heat Equation.[PhD Thesis ,Eastern Mediterranian University].
5. LAWRENCE ADEDAYO FARINOLA (2019). Grid Approximation of the Solution of Heat Conduction Equation.[PhD Thesis ,Eastern Mediterranian University].
6. ESRA TERCAN (Ongoing). [PhD Thesis ,Eastern Mediterranian University].

Published International Journal Articles

1. Hüseyin Aktuğlu;Suzan Cival Buranay.(2026). Approximations of Caputo fractional order derivatives by ?-Bernstein-Kantorovich operators and simulations on real-world datasets. NTERNATIONAL JOURNAL OF COMPUTER MATHEMATICS, -. doi:10.1080/00207160.2026.2643018
2. Suzan Cival Buranay;Mtema James Chin;Nazim I. Mahmudov.(2024). A highly accurate numerical method for solving boundary value problem of generalized Bagley-Torvik equation. MATHEMATICAL METHODS IN THE APPLIED SCIENCES, -. doi:DOI10.1002/mma.10501
3. Nazim I. Mahmudov;Suzan C. Buranay;Mtema James Chin.(2024). On the Existence, Uniqueness and a Numerical Approach to the Solution of Fractional Cauchy-Euler Equation. AXIOMS, 13(9), 1-25. doi:10.3390/axioms13090627
4. Arran Fernandez;Suzan Cival Buranay.(2024). The Peano-Sard theorem for Caputo fractional derivatives and applications. JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS, 441, -. doi:10.1016/j.cam.2023.115705
5. Ilkay Onbasi Elidemir;Mehmet Ali Ozarslan;Suzan Cival Buranay.(2024). On the analysis of fractional calculus operators with bivariate Mittag Leffler function in the kernel. JOURNAL OF APPLIED MATHEMATICS AND COMPUTING, 70(2), 1295-1323. doi:10.1007/s12190-024-02004-8
6. Buranay, Suzan Cival.(2024). Bivariate modified Bernstein-Kantorovich operators for the numerical solution of two-dimensional fractional Volterra integral equations. MATHEMATICAL METHODS IN THE APPLIED SCIENCES, 47(5), 3763-3785. doi:10.1002/mma.9267

Published International Journal Articles

7. Buranay, S. C.;Arshad, N..(2023). Solution of heat equation by a novel implicit scheme using block hybrid preconditioning of the conjugate gradient method. BULLETIN OF THE KARAGANDA UNIVERSITY-MATHEMATICS, 109(1), 58-80. doi:10.31489/2023M1/58-80

8. Buranay, S. C.;Ozarslan, M. A.;Falahhesar, S. S..(2023). Hybrid Operators for Approximating Nonsmooth Functions and Applications on Volterra Integral Equations with Weakly Singular Kernels. NUMERICAL FUNCTIONAL ANALYSIS AND OPTIMIZATION, 44(1), 36-63. doi:10.1080/01630563.2022.2150642

9. Buranay, Suzan Cival;Arshad, Nouman;Matan, Ahmed Hersi.(2021). Hexagonal Grid Computation of the Derivatives of the Solution to the Heat Equation by Using Fourth-Order Accurate Two-Stage Implicit Methods. FRACTAL AND FRACTIONAL, 5(4), -. doi:10.3390/fractalfract5040203

10. Buranay, Suzan Cival;Ozarslan, Mehmet Ali;Falahhesar, Sara Safarzadeh.(2021). Numerical Solution of the Fredholm and Volterra Integral Equations by Using Modified Bernstein-Kantorovich Operators. MATHEMATICS, 9(11), -. doi:10.3390/math9111193

11. Buranay, S. C.;Iyikal, O. C..(2021). Incomplete block-matrix factorization ofM-matrices using two-step iterative method for matrix inversion and preconditioning. MATHEMATICAL METHODS IN THE APPLIED SCIENCES, 44(9, SI), 7634-7650. doi:10.1002/mma.6502

12. Buranay, Suzan Cival;Matan, Ahmed Hersi;Arshad, Nouman.(2021). Two Stage Implicit Method on Hexagonal Grids for Approximating the First Derivatives of the Solution to the Heat Equation. FRACTAL AND FRACTIONAL, 5(1), -. doi:10.3390/fractalfract5010019

13. Buranay, Suzan C.;Arshad, Nouman.(2020). Hexagonal grid approximation of the solution of the heat equation on special polygons. ADVANCES IN DIFFERENCE EQUATIONS, 2020(1), -. doi:10.1186/s13662-020-02749-z

14. Buranay, Suzan C.;Iyikal, Ovgu C..(2019). Approximate Schur-Block ILU Preconditioners for Regularized Solution of Discrete Ill-Posed Problems. MATHEMATICAL PROBLEMS IN ENGINEERING, 2019, -. doi:10.1155/2019/1912535

15. Buranay, Suzan C.;Iyikal, Ovgu C..(2019). A predictor-corrector iterative method for solving linear least squares problems and perturbation error analysis. JOURNAL OF INEQUALITIES AND APPLICATIONS, -. doi:10.1186/s13660-019-2154-z

16. Buranay, Suzan C.;Farinola, Lawrence A..(2018). Implicit methods for the first derivative of the solution to heat equation. ADVANCES IN DIFFERENCE EQUATIONS, -. doi:10.1186/s13662-018-1887-1

17. Buranay, Suzan C.;Subasi, Dervis;Iyikal, Ovgu C..(2017). On the two classes of high-order convergent methods of approximate inverse preconditioners for solving linear systems. NUMERICAL LINEAR ALGEBRA WITH APPLICATIONS, 24(6), -. doi:10.1002/nla.2111

18. Dosiyev, A. A.;Buranay, S. C..(2015). One-block method for computing the generalized stress intensity factors for Laplace's equation on a square with a slit and on an L-shaped domain. JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS, 289, 400-411. doi:10.1016/j.cam.2014.11.029

19. Volkov, E. A.;Dosiyev, A. A.;Buranay, S. C..(2013). On the solution of a nonlocal problem. COMPUTERS & MATHEMATICS WITH APPLICATIONS, 66(3), 330-338. doi:10.1016/j.camwa.2013.05.010

20. Dosiyev, A. A.;Buranay, S. Cival.(2013). A Fourth-Order Block-Grid Method for Solving Laplace's Equation on a Staircase Polygon with Boundary Functions in Ck,lambda. ABSTRACT AND APPLIED ANALYSIS, -. doi:10.1155/2013/864865

21. Buranay, S. Cival.(2013). Analysis of the Block-Grid Method for the Solution of Laplace's Equation on Polygons with a Slit. ABSTRACT AND APPLIED ANALYSIS, -. doi:10.1155/2013/948564

22. Dosiyev, A. A.;Buranay, S. C.;Subasi, D..(2012). The highly accurate block-grid method in solving Laplace's equation for nonanalytic boundary condition with corner singularity. COMPUTERS & MATHEMATICS WITH APPLICATIONS, 64(4), 616-632. doi:10.1016/j.camwa.2011.12.068

23. Dosiyev, A. A.;Mazhar, Z.;Buranay, S. C..(2010). Block method for problems on L-shaped domains. JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS, 235(3), 805-816. doi:10.1016/j.cam.2010.07.007

24. Dosiyev, A. A.;Buranay, S. Cival;Subasi, D..(2010). The Block-Grid Method for Solving Laplace's Equation on Polygons with Nonanalytic Boundary Conditions. BOUNDARY VALUE PROBLEMS, 2010, -. doi:10.1155/2010/468594

Published International Journal Articles

25. Dosiyev, A. A.;Buranay, S. Cival.(2009). ON THE ORDER OF MAXIMUM ERROR OF THE FINITE DIFFERENCE SOLUTIONS TO LAPLACE'S EQUATION ON RECTANGLES (vol 50, pg 59, 2008). ANZIAM JOURNAL, 51(1), -. doi: 10.1017/S1446181109000327

26. Dosiyev, A. A.;Buranay, S. Cival.(2008). On solving the cracked-beam problem by block method. COMMUNICATIONS IN NUMERICAL METHODS IN ENGINEERING, 24(11), 1277-1289. doi:10.1002/cnm.1032

27. Dosiyev, A. A.;Buranay, S. Cival.(2008). ON THE ORDER OF MAXIMUM ERROR OF THE FINITE DIFFERENCE SOLUTIONS OF LAPLACE'S EQUATION ON RECTANGLES. ANZIAM JOURNAL, 50(1), 59-73. doi:10.1017/S1446181108000151

28. Dosiyev A.A.;Buranay S.C.(2005). A combined method for solving Laplace’s boundary value problem with singularities. International Journal of Pure and Applied Mathhematics, 3(21), 353-367

Published International Conference (Proceeding)

1. Suzan Cıval Buranay;Nazım I. Mahmudov. Runge-Kutta-Adams-Moulton Methods for Fractional Equations and Application to Fractional Logistic Problem. 9th International Conference on Control and Optimization with Industrial Applications (COIA), 2024. Turkey(AUG 2024).

2. Suzan Cival Buranay;Nazim I. Mahmudov;Mtema James Chin. A collocation-shooting method for solving fractional boundary value problems for generalized Bagley Torvik equation. ICAAM 2022. Turkey(FEB 2024). . doi:https://doi.org/10.1063/5.0194828

3. Buranay S.C. Bivariate Modified Bernstein-Kantorovich Operators for the Numerical Solution of Two-Dimensional Fractional Volterra Integral Equation. INTERNATIONAL CONFERENCE on Mathematical Analysis and Applications in Science and Engineering ICMASC22. Porto, Portugal(JUN 2022).

4. Buranay S.C.;Özarslan M.A.;Falahhesar S.S. Hybrid Operators for Solving the Weakly Singular Volterra Integral Equations: Numerical Analysis. The 3rd & 4th Mediterranean International Conference of Pure & Applied Mathematics and Related Areas (MICOPAM 2020-2021). Antalya, Turkey(NOV 2021).

5. Buranay S.C.;Özarslan M.A.;Falahhesar S.S. Hybrid Operators for Solving the Weakly Singular Volterra Integral Equations: Theoretical Analysis. The 3rd & 4th Mediterranean International Conference of Pure & Applied Mathematics and Related Areas (MICOPAM 2020-2021). Antalya, Turkey(NOV 2021).

6. Buranay S.C.;Hersi A.M;Arshad N. Highly Accurate Implicit Schemes for the Numerical Computation of Derivatives of the Solution to Heat Equation. The 3rd & 4th Mediterranean International Conference of Pure & Applied Mathematics and Related Areas (MICOPAM 2020-2021). Antalya, Turkey(NOV 2021).

7. Buranay S.C.;Arshad N. Implicit method of high accuracy on hexagonal grids for approximating the solution to heat equation on rectangle. AIP Conference Proceedings . Istanbul, Turkey(MAR 2021).

8. Buranay S.C.;Arshad N. Implicit Method of High Accuracy on Hexagonal Grids for Approximating the Solution to Heat Equation on a Domain with Smooth Boundary. 4th Interntional Conference of Mathematical Sciences ICMS 2020. Istanbul, Turkey(2020).

9. Buranay S.C;Hersi A.M.;Arshad N. Implicit method of second order accuracy on hexagonal grids for approximating the first derivatives of the solution to heat equation on a rectangle. Fifth International Conference on Analysis and Applied Mathematics, ICAAM 2020. Nicosia, Cyprus(SEP 2020).

10. Dosiyev A.A.;Buranay S.C. Effective Error Estimate for the Hexagonal Grid Solution of Laplace's Equation on a Rectangle. 8th INTERNATIONAL EURASIAN CONFERENCE ON MATHEMATICAL SCIENCES AND APPLICATIONS, Dedicated to the 100th Anniversary of Baku State University. Baku, Azerbaijan(AUG 2019).

11. Buranay S.C.;Iyikal O.C. Incomplete Block-Matrix Factorization of M-Matrices Using Two Step Iterative Method for Matrix Inversion and Preconditioning. 8th INTERNATIONAL EURASIAN CONFERENCE ON MATHEMATICAL SCIENCES AND APPLICATIONS, Dedicated to the 100th Anniversary of Baku State University. Baku, Azerbaijan(AUG 2019).

Published International Conference (Proceeding)

12. Buranay S.C. On the truncation error in the solution of Dirichlet problem for Laplace's equation in plane by finite differences using hexagonal grid. MICOPAM 2018. Antalya, Turkey(OCT 2018).
13. Buranay S.C.;Farinola L.A. Six Point Implicit Methods for the Pure Second Derivatives of the Solution of First type Boundary Value Problem for One Dimensional Heat Equation. International Conference on Analysis and Applied Mathematics (ICAAM 2018). Nicosia, Cyprus(AUG 2018).
14. S.C. Buranay;O.C. Iyikal. High Order Iterative Methods for Matrix Inversion and Regularized Solution of Fredholm Integral Equation of First Kind with Noisy Data. Proceedings of the 3rd International Conference on Computational and Engineering Sciences CMES2018. Kyrenia, Cyprus(JUN 2018).
15. Buranay S.C;Farinola L.A. Four Point Implicit Methods for the Second Derivatives of the Solution of First Type Boundary Value Problem for One Dimensional Heat Equation. Proceedings of the 3rd International Conference on Computational and Engineering Sciences CMES2018. Kyrenia, Cyprus(MAY 2018).
16. Dosiyev A.A.;Buranay S.C.. One-block method for computing the generalized stress ointensity factors for Laplace`s equation on a square with a slit and on L-shaped domain. Book of Abstracts for ACOMEN 2014. Gent, Belgium(JUN 2014).
17. Dosiyev A.A.;Buranay S.C.. A high accurate difference-analytical method for solving Laplace’s equation on polygons with nonanalytic boundary conditions. International Congress on Computational and Applied Mathematics (ICCAM2009). Antalya, Turkey(SEP 2009).
18. Dosiyev A.A.;Buranay S.C.;Mazhar Z.. Block Method for problems on L-Shaped domains. International Conference on Mathematical Analysis, Differential Equations and their Applications. Famagusta, Cyprus(SEP 2008).
19. Dosiyev A.A.;Buranay S.C.. On solving the cracked beam problem by a block method. 5th GRACM International Congress on Computational Mechanics . Limasol, Cyprus(JUN 2005).

Published Books/Chapters

1. S.C.Buranay;L.A.Farinola(2021). Six Point Implicit Methods for the Approximation of the Derivatives of the Solution of First Type Boundary Value Problem for Heat Equation. Allaberen Ashyralyev, Tynysbek Sh. Kalmenov, Michael V. Ruzhansky, Makhmud A. Sadybekov, Durvudkhan Suragan(Ed.),Functional Analysis in Interdisciplinary Applications-II(pp.39-62).Springer Nature, 351
2. A.A. Dosiyev;S.C. Buranay(2007). A fourth order accurate difference-analytical method for solving Laplace';s boundary value problem with singularities. K.Tas, J.A.T. Machado, D. Baleanu(Ed.),Mathematical Methods in Engineering(pp. 167-176).Springer

Projects

1. Collocation method for the Solutions of Fractional Boundary Value Problems of Generalized Bagley-Torvik Equation , [EMU ,BABC-04-23-01 (01.05.2023-01.07.2024)]
2. Analitik Olmayan Sınır Koşullu Laplace Denkleminin Tekilliği Bulunan Çözümleri için Blok-Izgara (Block-Grid) Yöntemi , [(01.01.2010-01.01.2011)]