

DR. MAASOOMAH SADAF

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Curriculum Vitae

Biography

Dr. Maasoomah Sadaf is a Pakistani mathematician specialized in the fields of solutions of differential equations, fractional calculus and soliton theory. She is a member of the Computational Mathematics Research Group at the Department of Mathematics, University of the Punjab. She has been serving as a regular faculty member in the University of the Punjab, Lahore, since 2008. Currently, she is working as an Assistant Professor at the Department of Mathematics, University of the Punjab, Lahore. According to Science-wide author databases of standardized citation indicators based on the dataset released by Scopus and Mendeley, Dr. Maasoomah Sadaf has been ranked among the top 2% of scientists worldwide in her field of study. She has published more than 100 research papers in international HEC recognized journals. The cumulative impact factor of her research articles is more than 341. Her research work has more than 1000 citations with h-index=18 and i10-index=45. She has worked as a Guest Editor of the international research journal *Fractal and Fractional* which is recognized as a W-category journal of mathematical research with impact factor 5.4. She is a reviewer for many HEC recognized W-category international research journals. She has attended and presented research papers at various national and international conferences. In recognition of her contributions, she has been awarded several Incentive Awards and Performance Evaluation Awards by the University of the Punjab. She has supervised 17 M.Phil and 1 Ph.D theses so far and 3 M.Phil theses are in progress. Dr. Maasoomah Sadaf has served as the Assistant Managerial Secretary for Punjab University Journal of Mathematics. She has coordinated several seminar series in the Department of Mathematics, University of the Punjab. Beyond academia, Dr. Maasoomah is an active participant in the departmental administrative matters. She has been a member of Board of Studies of Department of Mathematics, Board of Faculty of Science, Departmental Library Committee, Admission Committee and Quality Enhancement Cell Program Team among other responsibilities. Currently, she is the coordinator of Computer Centre, Department of Mathematics.

Academic Qualifications

- **Ph.D. (Doctor of Philosophy) in Mathematics (2014-2019)**
Department of Mathematics, University of the Punjab, Lahore.
Thesis title: Analytical Approximate Solutions of Differential Equations Using Some Effective Techniques

- **M.Phil. (Master of Philosophy) in Mathematics (2011-2013)**
Department of Mathematics, University of the Punjab, Lahore.
Thesis title: A Class of Methods for the Solution of Linear Fifth Order BVP Using Nonpolynomial Spline Technique
- **M.Sc. (Master of Science) in Mathematics (2005-2007)**
Department of Mathematics, University of the Punjab, Lahore.

Special Distinction

- Gold Medalist from Govt. College for Women, Samanabad, Lahore, Pakistan
- HEC Talent Farming Scholarship holder at M.Sc. level
- 3rd position in M.Sc. Mathematics
- Guest Editor special issue in journal Fractal and Fractional (impact factor: 5.4)
- Ranked among the top 2% of scientists worldwide according to science-wide author databases of standardized citation indicators based on the dataset released by Scopus and Mendeley

Awards and Achievements

- Recognized as HEC Approved PhD Supervisor
- Research Incentive Award 2017, 2018, 2020, 2021
- Performance Award 2017, 2018, 2019

Professional Experience

- **Assistant Professor, Department of Mathematics**
University of the Punjab, Lahore, Pakistan
(27-05-2022 to date)
- **Assistant Professor (ad hoc), Department of Mathematics**
University of the Punjab, Lahore, Pakistan
(25-01-2019 to 26-05-2022)
- **Lecturer, Department of Mathematics**
University of the Punjab, Lahore, Pakistan
(05-12-2008 to 24-01-2019)
- **Lecturer, Department of Mathematics**
Minhaj University Lahore, Pakistan
(06-02-2008 to 04-12-2008)

Editorial Experience

Guest Editor for the special issue of a W-category HEC recognized international journal of mathematical research.

Journal: Fractal and Fractional

Impact factor: 5.4

Special issue: Numerical Simulations and Advanced Techniques for Nonlinear Fractional Evolution Models

Administrative Experience

- Assistant Managerial Secretary, **Punjab University Journal of Mathematics** (2008-2009)
- Member, **Board of Studies, Department of Mathematics**, University of the Punjab (2013), (2015-2018)
- Member, **Departmental Library Committee** (2013-2014, 2023 to date)
- Member, **Board of Faculty of Science**, University of the Punjab (2013-2015)
- In Charge **Students Attendance Record**, Department of Mathematics (2013-2014)
- **Staff Secretary, Department of Mathematics**, University of the Punjab (2013-2014, 2019 to date)
- **Focal Person for Punjab University Main Library** from Department of Mathematics, University of the Punjab
- Member **Departmental Admission Committee** (2013, 2018, 2019, 2020, 2021, 2022, 2023, 2024)
- Assistant Coordinator, **Departmental Seminar Series** (2019-2023)
- **Quality Enhancement Cell (QEC) Program** Team Member (2022 to date)
- Coordinator, **Computer Centre, Department of Mathematics, University of the Punjab** (2024 to date).

Field of Interest

- Computational Mathematics
- Ordinary and Partial Differential Equations
- Fractional Calculus
- Analytical Solutions of Differential Equations
- Traveling Waves and Solitons

Research Publications

1. M. Vivas-Cortez, M. Sadaf, S. Arshed, K. Rehan, G. Akram and K. Saeed, Extraction of optical solitons for conformable perturbed Gerdjikov–Ivanov equation via two integrating techniques, *Advances in Mathematical Physics* (2024), 2024: 5936389.
2. G. Akram, M. Sadaf, S. Arshed and M. S. Riaz, Exact solutions of paraxial equation via extended hyperbolic function method, *Optical and Quantum Electronics* (2024), 56: 1621.
3. M. A. U. Khan, M. Sadaf, G. Akram, A. Birhanu, K. Rehan and Y. S. Hamed, Soliton solutions of nonlinear coupled Davey-Stewartson Fokas system using modified auxiliary equation method and extended (G'/G^2) -expansion method , *Scientific Reports* (2024), 14: 21949.
4. G. Akram, M. Sadaf, S. Arshed, M. Z. Raza, and A. S. M. Alzaidi, Formation of solitons for the modified nonlinear Schrödinger equation, *Modern Physics Letters B* (2024), 38: 2450189.
5. S. Arshed, G. Akram, M. Sadaf, P. Bakhtawer, and Y. S. Hamed, Optical solitons for the nonlinear perturbed Gerdjikov-Ivanov equation with constant and variable coefficients, *Optical and Quantum Electronics* (2024), 56: 1389.
6. M. Vivas-Cortez, M. Sadaf, Z. Perveen, G. Akram and S. Fatima, A study of time-fractional model for atmospheric internal waves with Caputo-Fabrizio derivative, *PLoS ONE* (2024), 19(7): e0302743.
7. G. Akram, M. Sadaf, I. Zainab and E. E. Mahmoud, Resonant multiple soliton and rogue type multiple lump wave solutions of the modified KdV-KP equation, *Optical and Quantum Electronics* (2024), 56:1215.
8. S. Arshed, G. Akram, M. Sadaf, E. Hussain, M. Abbas, A. S. M. Alzaidi and M. B. Riaz, Investigation of the dynamical structures for nonlinear Vakhnenko-Parkes equation using two integration schemes, *Optical and Quantum Electronics* (2024), 56:1072.
9. G. Akram, M. Sadaf, S. Arshed and M. A. B. Iqbal, Simulations of exact explicit solutions of simplified modified form of Camassa-Holm equation, *Optical and Quantum Electronics* (2024), 56:1037.
10. G. Akram, S. Arshed, M. Sadaf and H. Shadab, New traveling wave solutions for generalized Sasa-Satsuma equation via two integrating techniques, *Optical and Quantum Electronics* (2024), 56:1016.

11. S. Arshed, G. Akram, M. Sadaf, M. Irfan and M. Inc, Extraction of exact soliton solutions of (2+1)-dimensional Chaffee-Infante equation using two exact integration techniques, *Optical and Quantum Electronics* (2024), 56:988.
12. M. Sadaf, Z. Perveen, G. Akram, U. Habiba, M. Abbas and H. Emadifar, Solution of time-fractional gas dynamics equation using Elzaki decomposition method with Caputo-Fabrizio fractional derivative, *PLoS ONE* (2024), 19(7): e0300436.
13. M. Vivas-Cortez, S. Arshed, Z. Perveen, M. Sadaf, G. Akram, K. Rehan and K. Saeed, Analysis of perturbed Boussinesq equation via novel integrating schemes, *PLoS ONE* (2024), 19(5):e0302784.
14. G. Akram, M. Sadaf, S. Arshed and M. Farrukh, Optical soliton solutions of Manakov model arising in the description of wave propagation through optical fibers, *Optical and Quantum Electronics* (2024), 56:906.
15. G. Akram, M. Sadaf and M. A. U. Khan, Analytical study of Boiti-Leon-Manna-Pempinelli equation using two exact methods, *Optical and Quantum Electronics* (2024), 56:909.
16. G. Akram, S. Arshed, M. Sadaf and A. Khan, Extraction of new soliton solutions of (3+1)-dimensional nonlinear extended quantum Zakharov-Kuznetsov equation via generalized exponential rational function method and $(G'/G, 1/G)$ expansion method, *Optical and Quantum Electronics* (2024), 56:829.
17. S. Arshed, G. Akram, M. Sadaf and H. Shadab, New traveling wave solutions for paraxial wave equation via two integrating techniques, *Optical and Quantum Electronics* (2024), 56:791.
18. S. Arshed, G. Akram, M. Sadaf, R. Latif and H. Ahmad, Investigation of (2+1)-dimensional extended Calogero-Bogoyavlenskii-Schiff equation by generalized Kudryashov method and two variable $(G'/G, 1/G)$ -expansion method, *Optical and Quantum Electronics* (2024), 56:747.
19. M. Sadaf, S. Arshed, G. Akram, M. A. B. Iqbal and M. E. Samei, Solitary wave solutions of Camassa-Holm nonlinear Schrödinger and (3+1)-dimensional Boussinesq equations, *Optical and Quantum Electronics* (2024), 56:720.
20. M. Sadaf, S. Arshed, G. Akram, M. Z. Raza, H. Rezazadeh and M. A. Hosseinzadeh, Solitary wave dynamics of the extended (2+1)-dimensional Calogero-Bogoyavlenskii-Schiff equation, *Optical and Quantum Electronics*, 56:787.
21. M. A. Ullah, K. Rehan, Z. Perveen, M. Sadaf and G. Akram, Soliton dynamics of the KdV-mKdV equation using three distinct exact methods in nonlinear phenomena, *Nonlinear Engineering* (2024), 13: 20220318.

22. M. Sadaf, G. Akram and S. Arshed, Optical exact soliton solutions of nonlinear optical transmission equation using two explicit methods, *Optical and Quantum Electronics* (2024), 56:550.
23. S. Arshed, M. Sadaf, G. Akram and K. Farooq, Bright Solitons, dark solitons and periodic wave solutions of Chen-Lee-Liu model, *International Journal of Geometric Methods in Modern Physics* (2024), 21: 2450073.
24. M. Sadaf, S. Arshed, G. Akram, Andleeb ul Nabi, H. Ahmad and S. Askar, Soliton solutions of thin-film ferroelectric materials equation, *Results in Physics* (2024), 58:107380.
25. C. K. Chan, G. Akram, M. B. Riaz, M. Sadaf, I. Zainab, A. S.M. Alzaidi and M. Abbas, Abundant soliton solutions of the modified KdV-KP equation, *Results in Physics* (2024), 58: 107478.
26. G. Akram, M. Sadaf, S. Arshed, R. Latif, M. Inc and A. S. M. Alzaidi, Exact traveling wave solutions of (2+1)-dimensional extended Calogero-Bogoyavlenskii-Schiff equation using extended trial equation method and modified auxiliary equation method, *Optical and Quantum Electronics* (2024), 56:424.
27. G. Akram, M. Sadaf, S. Arshed and Iqra, A variety of novel traveling wave solutions to Fokas-Lenells model by two novel integration schemes, *Optical and Quantum Electronics* (2024), 56:390.
28. M. A. U. Khan, G. Akram and M. Sadaf, Dynamics of novel exact soliton solutions of concatenation model using effective techniques, *Optical and Quantum Electronics* (2024), 56:385.
29. G. Akram, M. Sadaf, Z. Perveen, M. Sarfraz, A. S. A. Alsubaie and M. Inc, Exact travelling wave solutions for generalized (3+1) dimensional KP and modified KP equations, *Optical and Quantum Electronics*, 56:325.
30. G. Akram, M. Sadaf, S. Arshed, M. Farrukh and K. M. Abualnaja, A study of optical solitons of Manakov model describing optical pulse propagation, *Optical and Quantum Electronics* (2024), 56:224.
31. M. Sadaf, S. Arshed, G. Akram, H. Shadab and A. S. M. Alzaidi, Traveling wave dynamics of the generalized Sasa-Satsuma equation by two integrating schemes, *Optical and Quantum Electronics* (2024), 56:209.
32. S. Arshed, G. Akram, M. Sadaf, Andleeb ul Nabi and A. S. M. Alzaidi, Optical soliton solutions of perturbed nonlinear Schrödinger equation with parabolic law nonlinearity, *Optical and Quantum Electronics* (2024), 56:50.

33. G. Akram, I. Zainab, M. Sadaf, A. Bucur, Solitons, one line rogue wave and breather wave solutions of a new extended KP-equation, *Results in Physics* (2023), 55: 107147.
34. M. Sadaf, S. Arshed, G. Akram and E. Husaain, Dynamical behavior of nonlinear cubic-quartic Fokas-Lenells equation with third and fourth order dispersion in optical pulse propagation, *Optical and Quantum Electronics* (2023), 55:1207.
35. A. M. Elsherbeny, A. Bekir, A. H. Arnous, M. Sadaf and G. Akram, Solitons to the time-fractional Radhakrishnan-Kundu-Lakshmanan equation with β and M -truncated fractional derivatives: a comparative analysis, *Optical and Quantum Electronics* (2023), 55:1112.
36. M. Sadaf, S. Arshed, G. Akram, M. R. Ali and I. Bano, Analytical investigation and graphical simulations for the solitary wave behavior of Chaffee-Infante equation, *Results in Physics* (2023), 54: 107097.
37. G. Akram, M. A. U. Khan, R. U. Gobithaasan, M. Sadaf and M. Abbas, Convexity and monotonicity preservation of ternary 4-point approximating subdivision scheme, *Journal of Mathematics* (2023), 2023: 9969407.
38. S. Arshed, G. Akram, M. Sadaf and A. Khan, Solutions of (3+1)-dimensional extended quantum nonlinear Zakharov-Kuznetsov equation using the generalized Kudryashov method and the modified Khater method, *Optical and Quantum Electronics* (2023), 55:922.
39. G. Akram, M. Sadaf, I. Zainab, M. Abbas, and A. Akgül, A comparative study of time fractional nonlinear Drinfeld–Sokolov–Wilson system via modified auxiliary equation method, *Fractal and Fractional* (2023), 7:665.
40. G. Akram, S. Arshed, M. Sadaf and K. Farooq, A study of variation in dynamical behavior of fractional complex Ginzburg-Landau model for different fractional operators, *Ain Shams Engineering Journal* (2023), 14(9), 102120.
41. G. Akram, M. Sadaf and I. Zainab, Effect of a new local derivative on space-time fractional nonlinear Schrödinger equation and its stability analysis, *Optical and Quantum Electronics* (2023), 55:834.
42. H. Tariq, G. Akram, M. Sadaf, M. Iftikhar and L. Guran, Computational study for fiber bragg gratings with dispersive reflectivity using fractional derivative, *Fractal and Fractional* (2023), 7:625.
43. G. Akram, S. Arshed and M. Sadaf, Soliton solutions of generalized time-fractional Boussinesq-like equation via three techniques, *Chaos, Solitons and Fractals* (2023), 173: 113653.

44. F. Batool, G. Akram, M. Sadaf and U. Mehmood, Dynamics investigation and solitons formation for (2+1)-dimensional Zoomeron equation and foam drainage equation, *Journal of Nonlinear Mathematical Physics* (2023), 30:628-645.
45. S. Arshed, G. Akram, M. Sadaf, I. Latif and M.M. Yasin, A variety of structures of optical solitons for the nonlinear Schrödinger equation with generalized anti-cubic nonlinearity, *Optical and Quantum Electronics* (2023), 55:542.
46. M. Sadaf, G. Akram, S. Arshed and H. Sabir, Optical solitons and other solitary wave solutions of (1+1)-dimensional Kudryashov's equation with generalized anti-cubic nonlinearity, *Optical and Quantum Electronics* (2023), 55:529.
47. X. Wang, H. Ehsan, M. Abbas, G. Akram, M. Sadaf and T. Abdeljawad, Analytical solitary wave solutions of a time-fractional thin-film ferroelectric material equation involving beta-derivative using modified auxiliary equation method, *Results in Physics* (2023), 48:106411.
48. A. Mahmood, M. Abbas, G. Akram, M. Sadaf, M.B. Riaz, and T. Abdeljawad, Solitary wave solution of (2+1)-dimensional Chaffee-Infante equation using the modified Khater method, *Results in Physics* (2023), 48:106416.
49. M. Sadaf, G. Akram, M. Inc, Mirfa Dawood, H. Rezazadeh and Ali Akgül, Exact special solutions of space-time fractional Cahn-Allen equation by beta and M-truncated derivatives, *International Journal of Modern Physics B* (2024), 2450118.
50. G. Akram, M. Sadaf, S. Arshed and U. Ejaz, Travelling wave solutions and modulation instability analysis of the nonlinear Manakov-system, *Journal of Taibah University for Science* (2023), 17:2201967.
51. G. Akram, S. Arshed, M. Sadaf, H. Mariyam, M.N. Aslam, R. Ahmad, I. Khan and J. Alzahrani, Abundant solitary wave solutions of Gardner's equation using three effective integration techniques, *AIMS Mathematics* (2023), 8(4): 8171-8184.
52. G. Akram, M. Sadaf and M.A.U. Khan, Soliton solutions of the resonant nonlinear Schrödinger equation using modified auxiliary equation method with three different nonlinearities, *Mathematics and Computers in Simulation* (2023), 206:1-20.
53. M. Sadaf, S. Arshed, G. Akram and Iqra, A variety of solitary wave solutions for the modified nonlinear Schrödinger equation with conformable fractional derivative, *Optical and Quantum Electronics* (2023), 55:372.
54. G. Akram, M. Sadaf, M.A.U. Khan H. Hosseinzadeh, Analytical solutions of the fractional complex Ginzburg-Landau model using generalized exponential rational

function method with two different nonlinearities, *Advances in Mathematical Physics* (2023), 2023:9720612.

55. G. Akram, S. Arshed, M. Sadaf and M. Maqbool, Comparison of fractional effects for Phi-4 equation using beta and M-truncated derivatives, *Optical and Quantum Electronics* (2023), 55:282.
56. M. Sadaf, A. Khan, Z. Perveen, G. Akram and M. Abbas, Effect of fractional order on unsteady magnetohydrodynamics pulsatile flow of blood inside an artery, *Thermal Science* (2023), 27(2B):1727-1734.
57. M. Sadaf, Z. Perveen, I. Zainab, G. Akram, M. Abbas and D. Baleanu, Dynamics of unsteady fluid-flow caused by a sinusoidally varying pressure gradient through a capillary tube with Caputo-Fabrizio derivative, *Thermal Science* (2023), 27(Special Issue 1):49-56.
58. M. Vivas-Cortez, S. Arshed, M. Sadaf, Z. Perveen and G. Akram, Numerical simulations of the soliton dynamics for a nonlinear biological model: Modulation instability analysis, *PLoS ONE* (2023), 18(2): e0281318.
59. M. Vivas-Cortez, G. Akram, M. Sadaf, S. Arshed, K. Rehan and K. Farooq, Traveling wave behavior of new (2+1)-dimensional combined KdV-mKdV equation, *Results in Physics* (2023), 45:106244.
60. Y.M. Chu, S. Arshed, M. Sadaf, G. Akram and M. Maqbool, Solitary wave dynamics of thin-film ferroelectric material equation, *Results in Physics* (2023), 45:106201.
61. G. Akram, M. Sadaf, M. Dawood, M. Abbas and D. Baleanu, Solitary wave solutions to Gardner equation using improved $\tan(\Omega(Y)/2)$ -expansion method, *AIMS Mathematics* (2023), 8(2):4390-4406.
62. S. Arshed, G. Akram, M. Sadaf, Qurrat-ul-ain, M.B. Riaz, A. Wojciechowski, Solitary wave behavior of (2+1)-dimensional Chaffee-Infante equation, *PLoS ONE* (2023), 18(1): e0276961.
63. M. Sadaf, G. Akram, S. Arshed and K. Farooq, A study of fractional complex Ginzburg-Landau model with three kinds of fractional operators, *Chaos, Solitons and Fractals* (2023), 166:112976.

64. G. Akram, M. Sadaf, M.A.U. Khan and S. Pamiri, Dynamic investigation of the Laksmanan-Porsezian-Daniel model with Kerr, parabolic, and anti-cubic laws of nonlinearities. *Frontiers in Physics* (2022), 10:1054429.
65. S.W. Yao, G. Akram, M. Sadaf, I. Zainab, H. Rezazadeh, M. Inc, Bright, dark, periodic and kink solitary wave solutions of evolutionary Zoomeron equation, *Results in Physics* (2022), 43:106117.
66. N. Sajid, Z. Perveen, M. Sadaf, G. Akram, M. Abbas, T. Abdeljawad, M.A.Alqudah, Implementation of the Exp-function approach for the solution of KdV equation with dual power law nonlinearity, *Computational and Applied Mathematics* (2022) 41:338.
67. S. Arshed, M. Sadaf, G. Akram, M.M. Yasin, Analysis of Sasa–Satsuma equation with beta fractional derivative using extended (G'/G^2)-expansion technique and $(\exp(-\phi(\xi)))$ -expansion technique, *Optik* (2022), 271:170087.
68. S. Arshed, G. Akram, M. Sadaf and M.M. Yasin, Extraction of new exact solutions of the resonant fractional nonlinear Schrödinger equation via two integrating techniques, *Optical and Quantum Electronics* (2022), 54:799.
69. G. Akram, M. Sadaf, S. Arshed and H. Sabir, Optical soliton solutions of fractional Sasa-Satsuma equation with beta and conformable derivatives, *Optical and Quantum Electronics* (2022), 54:741.
70. G. Akram, M. Sadaf, M.A.U. Khan, Dynamics investigation of the (4 + 1)-dimensional Fokas equation using two effective techniques, *Results in Physics* (2022), 42:105994.
71. X. Wang, G. Akram, M. Sadaf, H. Mariyam and M. Abbas, Soliton solution of the Peyrard-Bishop-Dauxois model of DNA dynamics with M-truncated and β -fractional derivatives using Kudryashov's R function method, *Fractal and Fractional* (2022), 6:616.
72. G. Akram, M. Sadaf and F. Sameen, Optical solitons for the complex Ginzburg-Landau equation with Kerr law and non-Kerr law nonlinearity, *Optical and Quantum Electronics* (2022), 54:630.

73. M. Sadaf, S. Arshed, G. Akram and Iqra, Exact soliton and solitary wave solutions to the Fokas system using two variables ($G'/G, 1/G$)-expansion technique and generalized projective Riccati equation method, *Optik* (2022), 268:169713.
74. S. Arshed, G. Akram, M. Sadaf and K. Saeed, Construction of new solutions of Korteweg-de Vries Caudrey-Dodd-Gibbon equation using two efficient integration methods, *PLoS ONE* (2022) 17(9):e0275118.
75. M. Sadaf, G. Akram and H. Mariyam, Abundant solitary wave solutions of Gardner's equation using new ϕ^6 -model expansion method, *Alexandria Engineering Journal*, (2022), 61(7):5253-5267.
76. G. Akram, S. Arshed, M. Sadaf and F. Sameen, The generalized projective Riccati equations method for solving quadratic-cubic conformable time-fractional Klien-Fock-Gordon equation, *Ain Shams Engineering Journal* (2022), 13:101658.
77. M. Sadaf, G. Akram and M. Dawood, An investigation of fractional complex Ginzburg–Landau equation with Kerr law nonlinearity in the sense of conformable, beta and M-truncated derivatives, *Optical and Quantum Electronics* (2022), 54:248.
78. G. Akram, M. Sadaf, S. Arshed and F. Sameen, Traveling wave solutions of conformable time-fractional Klien-Fock-Gordon equation by the improved $\tan(\Psi(\zeta)/2)$ -expansion method, *Journal of King Saud University - Science*, (2022), 34(3): 101822.
79. G. Akram, M. Sadaf and I. Zainab, The dynamical study of Biswas-Arshed equation via modified auxiliary equation method, *Optik* (2022), 255:168614.
80. G. Akram, M. Sadaf and H. Mariyam, A comparative study of the optical solitons for the fractional complex Ginzburg-Landau equation using different fractional differential operators, *Optik* (2022), 256:168626.
81. G. Akram, M. Sadaf and M.A.U. Khan, Soliton dynamics of the generalized shallow water like equation in nonlinear phenomenon, *Frontiers in Physics* (2022), 10:822042.
82. G. Akram, M. Abbas, H. Tariq, M. Sadaf, T. Abdeljawad and M.A. Alqudah, Numerical approximations for the solutions of fourth order time fractional evolution problems using a novel spline technique, *Fractal and Fractional* (2022), 6:170.
83. G. Akram, M. Sadaf, M. Abbas, I. Zainab and S.R. Gillani, Efficient techniques for traveling wave solutions of time-fractional Zakharov-Kuznetsov equation, *Mathematics and Computers in Simulation* (2022), 193:607-622.

84. G. Akram, M. Sadaf and M.A.U. Khan, Soliton solutions of Lakshmanan-Porsezian-Daniel model using modified auxiliary equation method with parabolic and anti-cubic law of nonlinearities, *Optik* (2022), 252:168372.
85. G. Akram, M. Sadaf and M.A.U. Khan, Abundant optical solitons for Lakshmanan-Porsezian-Daniel model by the modified auxiliary equation method, *Optik* (2022), 251:168163.
86. G. Akram, M. Sadaf and I. Zainab, New graphical observations for KdV equation and KdV-Burgers equation using modified auxiliary equation method, *Modern Physics Letters B* (2022), 36(1):2150520.
87. G. Akram, M. Sadaf, M. Sarfraz and N. Anum, Dynamics investigation of (1+1)-dimensional time-fractional potential Korteweg-de Vries equation, *Alexandria Engineering Journal* (2022), 61:501-509.
88. G. Akram, M. Sadaf and I. Zainab, Observations of fractional effects of β -derivative and M-truncated derivative for space time fractional Phi-4 equation via two analytical techniques, *Chaos, Solitons and Fractals* (2022), 154:111645.
89. G. Akram, S. Arshed, M. Sadaf and Zainab, Extraction of new exact soliton solutions and Painlevé-test for fractional Cahn-Allen equation, *Optical and Quantum Electronics* (2022), 54:46.
90. G. Akram, M. Sadaf and M. Dawood, Abundant soliton solutions for Radhakrishnan-Kundu-Laksmanan equation with Kerr law non-linearity by improved $\tan(\Phi(\xi)/2)$ -expansion technique, *Optik* (2021), 247:167787.
91. H. Tariq, M. Sadaf, G. Akram, H. Rezazadeh, J. Baili, Y.P. Lv and H. Ahmad, Computational study for the conformable nonlinear Schrödinger equation with cubic–quintic–septic nonlinearities, *Results in Physics*, (2021), 30:104839.
92. G. Akram, M. Sadaf, M. Dawood and D. Baleanu, Optical solitons for Lakshmanan-Porsezian-Daniel equation with Kerr law non-linearity using improved $\tan\psi/(\eta)/2$ -expansion technique, *Results in Physics*, (2021), 29:104758.
93. G. Akram, M. Sadaf, S. Arshed and F. Sameen, Bright, dark, kink, singular and periodic soliton solutions of Lakshmanan-Porsezian-Daniel model by generalized projective Riccati equations method, *Optik*, (2021), 241: 167051.
94. G. Akram, M. Sadaf and M. Dawood, Kink, periodic, dark and bright soliton solutions of Kudryashov-Sinelshchikov equation using the improved $\tan(\phi/\eta)/2$ -expansion technique, *Optical and Quantum Electronics*, (2021), 53:480.

95. N. Faraz, M. Sadaf, G. Akram, I. Zainab and Y. Khan, Effects of fractional order time derivative on the solitary wave dynamics of the generalized ZK–Burgers equation, *Results in Physics*, (2021), 25:104217.
96. M. Sadaf and G. Akram, Effects of fractional order derivative on the solution of time-fractional Cahn–Hilliard equation arising in digital image inpainting, *Indian Journal of Physics*, (2021), 95(5):891-899.
97. M. Sadaf and G. Akram, Analytical approximate solutions of time-fractional integro-differential equations using a new iterative technique, *TWMS Journal of Applied and Engineering Mathematics*, (2021), 11(2): 605-615.
98. M. Sadaf and G. Akram, A Legendre-homotopy method for the solutions of higher order boundary value problems, *Journal of King Saud University-Science*, (2020), 32(1):537-543.
99. G. Akram and M. Sadaf, Solution of damped generalized regularized long-wave equation using a modified homotopy analysis method, *Indian Journal of Physics* (2018), 92(2): 191-196.
100. G. Akram, M. Sadaf and N. Anum, Solutions of time-fractional Kudryashov–Sinelshchikov equation arising in the pressure waves in the liquid with gas bubbles, *Optical and Quantum Electronics* (2017), 49: 373.
101. G. Akram and M. Sadaf, Application of homotopy analysis method to the solution of ninth order boundary value problems in AFTI-F16 fighters, *Journal of the Association of Arab Universities for Basic and Applied Sciences* (2017), 24:149–155.
102. M. Sadaf and G. Akram, An improved adaptation of homotopy analysis method, *Mathematical Sciences* (2017), 11:55–62.
103. S. S. Siddiqi and M. Sadaf, Application of non-polynomial spline to the solution of fifth-order boundary value problems in induction motor, *Journal of the Egyptian Mathematical Society* (2015), 23:20–26.

Seminars and Conferences

1. Presented a paper as an invited speaker in 6th International Conference on Pure and Applied Mathematics (ICPAM-2023) at University of Sargodha, Sargodha (06-12-2024 to 07-12-2024).
2. Participated in Lecture Series by Dr. Eric Dolores Cuenca at the Department of Mathematics, University of the Punjab, Lahore (15-10-2022 to 27-10-2022)

3. Organized National Undergraduate Mathematics Contest at the Department of Mathematics, University of the Punjab, Lahore, on 01-10-2022.
4. Organized Departmental Seminar Series at the Department of Mathematics, University of the Punjab, Lahore, from 01-07-2022 to 30-06-2023.
5. Attended Lecture Series by Prof. Dr. Kai Hormann at the Department of Mathematics, University of the Punjab, Lahore, from 21-03-2022 to 26-03-2022.
6. Organized and participated in PU-NMS International Schools Series for Students and Faculty at the Department of Mathematics, University of the Punjab, Lahore, from 14-02-2022 to 18-02-2022.
7. Presented a paper titled "Traveling Wave Solutions of Nonlinear Evolution Equations Using the $\tan(\psi(\eta)/2)$ -Expansion Technique" at the Departmental Seminar Series at Department of Mathematics, University of the Punjab, Lahore, on 08-12-2021.
8. Organized Departmental Seminar Series at the Department of Mathematics, University of the Punjab, Lahore, from 01-11-2021 to 30-06-2022.
9. Delivered a talk titled "Approximate Solutions of Time-Fractional Cahn-Hilliard Equations Using Two Reliable Techniques" in 5th UMT International Conference on Pure and Applied Mathematics (5th UICPAM-2019) held on March 29-31, 2019.
10. Organized Seminar Series at the Department of Mathematics, University of the Punjab, Lahore, from 09-01-2019 to 15-03-2019.
11. Delivered a talk titled "A Modified Homotopy Analysis Method for Analytical Approximate Solution of DGRLW Equation" in the 4th UMT International Conference on Pure and Applied Mathematics (4th UICPAM-2018) held on March 31-02 April, 2018.
12. Delivered a talk titled "Wave Solutions of Nonlinear Eckhaus Equation and Generalized ZK-Burgers Equation" in 3rd UMT International Conference in Pure and Applied Mathematics (3rd UICPAM-2017) held on March 04-06, 2017.
13. Delivered a seminar on "Analytical Approximate Solutions of Nonlinear Partial Differential Equations" in the Departmental Seminar Series at Department of Mathematics, University of the Punjab, Lahore. (20-12-2017)
14. Delivered a seminar on "Wave Solutions of Nonlinear Eckhaus Equation and

Generalized ZK-Burgers Equation” in the Departmental Seminar Series at Department of Mathematics, University of the Punjab, Lahore. (September 28, 2016)

15. Delivered a seminar on “Solutions of Ninth Order Boundary Value Problems using Homotopy Analysis Method” in the Departmental Seminar Series regularly held at Department of Mathematics, University of the Punjab, Lahore. (October 21, 2015).

16. Delivered a seminar on “Non-polynomial Spline Solutions of Fifth Order Boundary Value Problems” in the Departmental Seminar Series regularly held at Department of Mathematics, University of the Punjab, Lahore. (2013)

Research Supervision

Ph.D Thesis

1. Atta Ullah Khan
Thesis Title: Extraction of traveling wave solutions of nonlinear partial differential equations using effective techniques
Session: 2021-2024

M.Phil Theses

1. Mirfa Dawood
Thesis Title: Exact Solutions of Some Nonlinear Evolution Equations Using Improved $\tan(\Psi(\eta)/2)$ -Expansion Technique
Session: 2019-2021.
2. Hajra Mariyam
Thesis Title: Application of ϕ^6 -Model Expansion Method and Kudryashov's R Function Method for the Solutions of Nonlinear Partial Differential Equations
Session: 2019-2021
3. Habiba Sabir
Thesis Title: Exact Solutions of Kudryashov's Equation Using Two Effective Techniques
Session: 2020-2022
4. Maham Maqbool
Thesis Title: Solutions of Nonlinear Partial Differential Equations Using Extended Sinh-Gordon Expansion Method

Session: 2020-2022

5. Qurrat-ul-ain
Thesis Title: Solutions of Fractional Estevez-Mansfield-Clarkson Equation with M-Truncated and New Local Fractional Derivatives
Session: 2020-2022
6. Usama Ejaz
Thesis Title: Traveling wave solutions of two nonlinear evolution equations using extended (G'/G^2) -expansion method and $\exp(-\phi(\xi))$ -expansion method
Session: 2020-2022
7. Abid Ali
Thesis Title: Application of Two Efficient Analytical Methods for the Exact Solutions of the Nonlinear Optical Transmission Equation
Session: 2020-2022
8. Iqra
Thesis Title: Exact Solutions of Nonlinear Schrodinger Equations Using Two Reliable Techniques
Session: 2020-2022
9. Kainat Farooq
Thesis Title: Comparison of the Solutions of Fractional Complex Ginzburg-Landau Equation for M-Truncated, Conformable and Beta Derivatives
Session: 2020-2022
10. Ejaz Hussain
Thesis Title: Optical Solitons and Other Solutions of Cubic-Quartic Fokas-Lenells Equation
Session: 2021-2023
11. Muhammad Zubair Raza
Thesis Title: Solutions of modified nonlinear Schrodinger equation using two analytical techniques
Session: 2021-2023
12. Muhammad Abdaall Bin Iqbal
Thesis Title: Analytical wave solutions of two nonlinear evolution equations arising in mathematical physics
Session: 2021-2023
13. Sharmeen
Thesis Title: Solution of fractional order evolution equation
Session: 2021-2023

14. Ume Habiba
Thesis Title: Solution of fluid flow problem using transformation method
Session: 2021-2023
15. Bilal Khan
Thesis Title: Exact solutions of nonlinear PDEs using the $\exp(-\phi(\xi))$ expansion method
Session: 2022-2024
16. Shahid Mehmood
Thesis Title: Application of modified auxiliary equation method for solutions of nonlinear PDEs
Session: 2022-2024
17. Samar Hayat
Thesis Title: Application of an analytical technique for exact solutions of nonlinear PDEs
Session: 2022-2024
18. Muneeba Wazir
(Thesis in progress)
19. Noor Fatima
(Thesis in progress)
20. Ali Raza
(Thesis in progress)

M.Phil Thesis Evaluated

1. Amina Bibi
Thesis Title: Investigation of the soliton solutions to the fractional Kuralay equation using two analytical schemes
Affiliation: Department of Mathematics, University of Sargodha, Sargodha.
Session: 2022-2024
2. Habiba Faiz
Thesis Title: Solitary wave solutions of (2+1)-dimensional coupled Riemann wave equations via two abundant schemes
Affiliation: Department of Mathematics, University of Sargodha, Sargodha.
Session: 2022-2024.
3. Hira Samad

Thesis Title: Generalized iterative solution for fractional differential equation
Affiliation: Department of Mathematics, Lahore Garrison University, Lahore.
Session: 2021-2023

4. Muhammad Raza
Thesis Title: Solution of partial differential equation using power series solution method
Affiliation: Department of Mathematics, Lahore Garrison University, Lahore.
Session: 2021-2023
5. Abdul Qayyum
Thesis Title: A comparative study of Mohand and double Mohand decomposition method with Mohand projected differential transform method
Affiliation: Department of Mathematics, Lahore Garrison University, Lahore.
Session: 2021-2023
6. Hira Shehzadi
Thesis Title: Curve designing using non-stationary four point subdivision technique
Affiliation: Department of Mathematics, University of Engineering and Technology, Lahore.
Session: 2020-2022
7. Nishat Abbas
Thesis Title: On the edge metric dimension of arithmetic graph of a composite numbers
Affiliation: Department of Mathematics, Minhaj University Lahore.
Session: 2020-2022
8. Muhammad Awais Khan
Thesis Title: Peristaltic flow of Sisko fluid under the effects of viscous dissipation
Affiliation: Department of Mathematics, Minhaj University Lahore.
Session: 2020-2022
9. Farwa Zulfiqar
Thesis Title: Effects of heat and mass transfer on the paristaltic flow of Jaffrey six constant fluids in a vertical tube
Affiliation: Department of Mathematics, Minhaj University Lahore.
Session: 2020-2022
10. Sana Abbas
Thesis Title: Application of ant system on travelling salesman problem for blood donation network
Affiliation: Department of Mathematics, Minhaj University Lahore.
Session: 2020-2022

11. Nasar Ullah Khan

Thesis Title: Novel solutions of nonlinear Biswas-Molvić equations with Kerr law nonlinearity using ϕ^6 -model expansion method

Affiliation: Department of Mathematics, Minhaj University Lahore.

Session: 2019-2021

Reviewing for the Following Journals

1. AppliedMath
2. Journal of Thermal Stresses
3. Results in Physics
4. Ain Shams Engineering Journal
5. Heliyon
6. International Journal of Applied and Computational Mathematics
7. The European Physical Journal Plus
8. Journal of Advanced Research
9. Mathematics
10. Symmetry
11. Nonlinear Engineering: Modeling and Application
12. Axioms
13. Physica Scripta
14. AIMS Mathematics
15. Alexandria Engineering Journal
16. Applied Mathematics-A Journal of Chinese Universities
17. Mathematics Open
18. Journal of Applied Science and Engineering
19. Modern Physics Letters B
20. Optical and Quantum Electronics

Professional Trainings

- **Use of Generative Artificial Intelligence in Higher Education**
Organized by Punjab Higher Education Commission (08-05-2024 to 09-05-2024)
- **How to Improve /Implement HEC-QAA Parameters**
Training by QEC (Quality Enhancement Cell), University of the Punjab (03-03-2022)
- **HRDC Faculty Orientation Program 2009**
Organized by Institute of Administrative Sciences, University of the Punjab, Lahore (22-06-2024 to 26-06-2024)

Software and Computer Skills

Math Packages	Mathematica, Maple
OS	Windows
Typography	MS Word, Latex