CURRICULUM VITAE

PERSONAL DATA

Name	Mati ur Rahman
Nationality	Pakistan
Position	Assistant Professor
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EDUCATION

Year	Academic Degree	Institution
2022	PhD (Mathematics)	Shanghai Jiao Tong University, Shanghai, China
2017	MPhil (Mathematics)	University of Malakand, Khyber Pakhtunkhwa, Pakistan
2011	BS (Hon) (Mathematics)	University of Malakand, Khyber Pakhtunkhwa, Pakistan

WORK EXPERIENCE

Period	Position	Address
2023-2025	Postdoctoral fellowship	School of Mathematical Sciences, Jiangsu University, Zhenjiang, China

RESEARCH INTERESTS

Applied Mathematics

PUBLICATIONS

1. **Mati ur Rahman**, Sonia Akram, and Muhammad Asif. "Chaotic behavior, sensitive analysis and dynamics of invariant formulation of nonclassical symmetries to the nonlinear Tzitzéica equation arising in mathematical physics." **Boundary Value Problems** 2025, no. 1 (2025): 123.

2. Akram, Sonia, and **Mati ur Rahman**. "Multiscale soliton structures and dynamical analysis of nonlinear discrete electrical lattices modeled by the Salerno equation." **Nonlinear Dynamics** (2025): 1-22.

3. Alzahrani, Taher, and **Mati ur Rahman**. "Lump, breathing inelastic collision phenomena and rogue wave solutions for a extended KP hierarchy-type equation by neural network-based method." **Ain Shams Engineering Journal** 16, no. 10 (2025): 103657.

4. Akram, Sonia, and **Mati Ur Rahman**. "Exploring Nonlinear dynamics and soliton structures in the spin reduced Hirota-Maxwell-Bloch system via Atangana's conformable operator." **Chinese Journal of Physics** (2025).

5. Akram, Sonia, **Mati ur Rahman**, and Laila A. AL-Essa. "A comprehensive dynamical analysis of (2+ 1)-dimensional nonlinear electrical transmission line model with Atangana–Baleanu derivative." **Physics Letters A** (2025): 130762.

6. Alazman, Ibtehal, Manvendra Narayan Mishra, Badr Saad T. Alkahtani, and **Mati ur Rahman**. "Comparative study of novel solitary wave solutions with unveiling bifurcation and chaotic structure modelled by stochastic dynamical system." **Zeitschrift für Naturforschung A** 80, no. 4 (2025): 285-311.

7. **Mati ur Rahman**, Mei Sun, Salah Boulaaras, and Dumitru Baleanu. "Bifurcations, chaotic behavior, sensitivity analysis, and various soliton solutions for the extended nonlinear Schrödinger equation." **Boundary Value Problems** 2024, no. 1 (2024): 15.

8. **Mati ur Rahman**, Salah Boulaaras, Saira Tabassum, and Dumitru Baleanu. "A deep neural network analysis of fractional omicron mathematical model with vaccination and booster dose." **Alexandria Engineering Journal** 118 (2025): 435-448.

9. Tabassum, Saira, and **Mati ur Rahman**. "Exploring corruption dynamics through Caputo fractional models with deep neural network interventions." **Journal of Applied Mathematics and Computing** 71, no. 2 (2025): 2703-2726.

10. **Mati ur Rahman**, Saira Tabassum, Ali Althobaiti, Waseem, and Saad Althobaiti. "An analysis of fractional piecewise derivative models of dengue transmission using deep neural network." **Journal of Taibah University for Science** 18, no. 1 (2024): 2340871.

11. Li, Peiluan, Sairu Shi, Changjin Xu, and **Mati ur Rahman**. "Bifurcations, chaotic behavior, sensitivity analysis and new optical solitons solutions of Sasa-Satsuma equation." **Nonlinear Dynamics** 112, no. 9 (2024): 7405-7415.

12. Waseem, Sabir Ali, and **Mati Ur Rahman**. "Analysis of Ebola virus model using intelligent computing of a new stochastic neural network." **International Journal of Biomathematics** (2025): 2450162.

13. Han, Tianyong, Hadi Rezazadeh, and **Mati Ur Rahman**. "High-order solitary waves, fission, hybrid waves and interaction solutions in the nonlinear dissipative (2+ 1)-dimensional Zabolotskaya-

Khokhlov model." **Physica Scripta** 99, no. 11 (2024): 115212.

14. Al-Essa, Laila A., and **Mati Ur Rahman**. "A survey on fractal fractional nonlinear Kawahara equation theoretical and computational analysis." **Scientific Reports** 14, no. 1 (2024): 6990.

15. Mati ur Rahman, Yeliz Karaca, Ravi P. Agarwal, and Sergio Adriani David. "Mathematical modelling with computational fractional order for the unfolding dynamics of the communicable diseases." **Applied Mathematics in Science and Engineering** 32, no. 1 (2024): 2300330.

BOOK/CHAPTER PUBLICATIONS

1. Karaca, Yeliz, **Mati ur Rahman**, and Dumitru Baleanu. "Fractional Order Computing and Modeling with Portending Complex Fit Real-World Data." In International Conference on   Computational Science and Its Applications, pp. 144-159. **Cham: Springer Nature Switzerland**, 2023.

2. Anjam, Yasir Nadeem, Mehmet Yavuz, Amna Batool, and **Mati Ur Rahman**. "A Comprehensive Qualitative Examination of a Fractional-Order Model for Divorce Dynamics." **In The Fundamentals of Fractional Calculus**, pp. 418-442. Apple Academic Press.

CONFERENCE PUBLICATIONS

1. Karaca, Yeliz, Dumitru Baleanu, **Mati ur Rahman**, and Shaher Momani. "Multicompartmental Mathematical Models of Infectious Dynamic Diseases with Time Fractional-order Derivatives."**In 2023 International Conference on Fractional Differentiation and Its Applications (ICFDA)**, pp. 1-6. IEEE, 2023.

2. Karaca, Yeliz, **Mati ur Rahman**, Dumitru Baleanu, Theoretical and Numerical Investigation of a New ABC Fractional Operator for the Multi-strain Tuberculosis Mathematical Computing Model **International Conference on Nonlinear Science and Complexity (ICNSC23) At: İstanbul, Türkiye** July 2023.