

# Dr. Aziz Ullah Awan

## Associate Professor

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<https://www.researchgate.net/profile/Aziz-Awan>

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## EDUCATION

### **Ph.D. Mathematics (2007-2012)**

#### Supervised by

Prof. Dr. Constantin Fetecau  
Abdus Salam School of Mathematical Sciences,  
Government College University,  
Lahore, Pakistan.

### **M.Phil. Mathematics (2004-2006)**

#### Supervised by

Prof. Dr. Muhammad Sharif  
Department of Mathematics,  
University of the Punjab,  
Lahore, Pakistan.

### **B.Ed. (2002-2004)**

Allama Iqbal Open University Islamabad,  
Pakistan.

### **M.Sc. Mathematics (2000-2002)**

Department of Mathematics,  
University of the Punjab,  
Lahore, Pakistan.

## AWARDS

- Invited Participant in “International School on Extrinsic Curvature Flows” by Abdus Salam International Centre for Theoretical Physics (ICTP) from June 04-15, 2018.
- Indigenous HEC Ph.D. Fellowship (Batch-IV), awarded by Higher Education Commission (HEC) Pakistan in 2007.
- Enlisted in the top 2% of scientists' ranking by Stanford University in 2022, 2023 and 2024.

## SOFTWARES

MS Word; Latex; Power Point; Mathematica; Matlab.

## **Employment History**

- ❖ Tenured Associate Professor (August 2020- to date)  
Dept. of Mathematics, University of the Punjab, Lahore, Pakistan.
- ❖ Assistant Professor (March 2013- August 2020)  
Dept. of Mathematics, University of the Punjab, Lahore, Pakistan.
- ❖ Lecturer (May 2006-March 2013)  
Dept. of Mathematics, University of the Punjab, Lahore, Pakistan.
- ❖ Lecturer (April 2005-May 2006)  
Govt. College, Noorpur Thal (Khushab), Pakistan.
- ❖ Subject Specialist (September 2003- August 2004)  
KCP Model Higher Sec. School, KCP Colony Chowk Girote (Khushab), Pakistan.
- ❖ Lecturer (March 2003- August 2003)  
District Public School, Jauharabad (Khushab), Pakistan.
- ❖ Lecturer (October 2002- March 2003)  
Govt. College, Jauharabad (Khushab), Pakistan.

## **Teaching**

I have taught the following courses :

- Calculus I
- Calculus II
- Vector and Tensor Analysis
- Mechanics
- Ordinary Differential Equations
- Partial Differential Equations
- Analytical Dynamics
- Methods of Mathematical Physics
- Special Theory of Relativity
- Quantum Mechanics-I
- Methods of Mathematical Physics
- Special Theory of Relativity and Analytical Dynamics
- Electromagnetic Theory
- Fluid Dynamics I & II
- Introduction to Bio Mathematics
- Reading and Research

# Research Papers

## Published in 2024

1. Haneen Hamam, Yasir Ramzan, Shafullah Niazai, Khaled A. Gepreel, **Aziz Ullah Awan**, Muhammad Ozair, Takasar Hussain, Deciphering the enigma of Lassa virus transmission dynamics and strategies for effective epidemic control through awareness campaigns and rodenticides, *Scientific Reports*, 14 (2024) 18079. <https://doi.org/10.1038/s41598-024-68600-7>. **(IF=4.996) (W, United Kingdom)**
2. **Aziz Ullah Awan**, Syed Asif Ali Shah, Sidra Qayyum, Hanadi Alzubadi, N. Ameer Ahammad, Roobaea Alroobaea, Mixed convected synchronization of gyrotactic microorganism flow of an Eyring–Powell nanofluid over a rigid plate, *ZAMM - Journal of Applied Mathematics and Mechanics*, e202301055 (2024) 1-19. <https://doi.org/10.1002/zamm.202301055>. **(IF=1.759) (W, Germany)**
3. Hamood Ur Rehman, Ifrah Iqbal, Mohamed Medani, **Aziz Ullah Awan**, Uzma Perveen, Roobaea Alroobaea, Analyzing the dynamics of multi-solitons and other solitons in the perturbed nonlinear Schrödinger equation, *Modern Physics Letters B*, (2024) 2450468. <https://doi.org/10.1142/S0217984924504682>. **(IF=1.948) (X, Singapore)**
4. Muhammad Hasnain Shahzad, **Aziz Ullah Awan**, Sohail Nadeem, N. Ameer Ahammad, Haneen Hamam, Ahmed Alamer, Sidra Shafique, Rheological effects in peristaltic flow of Prandtl fluid through elliptical duct: A comprehensive analysis, *ZAMM - Journal of Applied Mathematics and Mechanics*, (2024) 1-20. <https://doi.org/10.1002/zamm.202400094>. **(IF=1.759) (W, Germany)**
5. Muhammad Hasnain Shahzad, N. Ameer Ahammad, Sohail Nadeem, **Aziz Ullah Awan**, Kamel Guedri, Ahmed Alamer, Bandar M. Fadhl, Non-Newtonian blood flow across stenosed elliptical artery: Case study of nanoparticles for brain disabilities with fuzzy logic, *Modern Physics Letters B*, (2024) 2450470. <https://doi.org/10.1142/S0217984924504700>. **(IF=1.948) (X, Singapore)**
6. **Aziz Ullah Awan**, Sidra Qayyum, Sohail Nadeem, N. Ameer Ahammad, Khaled A. Gepreel, Mohammed Alharthi, Moataz Alosaimi, Analysis of chemical characteristics of engine-oil-based Prandtl hybrid nanofluid flow, *ZAMM - Journal of Applied Mathematics and Mechanics*, (2024) 1-16. <https://doi.org/10.1002/zamm.202400050>. **(IF=1.759) (W, Germany)**
7. H. Ashraf, Dean Chou, Rabia Hameed, Hamood Ur Rehman, **Aziz Ullah Awan**, Abdul Malik Sultan, Flow analysis of temperature-dependent variable viscosity Phan Thien Tanner fluid thin film over a horizontally moving heated plate, *Case Studies in Thermal Engineering*, 60 (2024) 104726. <https://doi.org/10.1016/j.csite.2024.104726>. **(IF=6.4) (W, United Kingdom)**
8. Madiha Akram, Muhammad Hasnain Shahzad, N. Ameer Ahammad, Fehmi Gamaoun, **Aziz Ullah Awan**, Haneen Hamam, Roobaea Alroobaea, Rheology of Eyring-Powell hybrid nanofluid flow under the peristaltic effects through an elliptical conduit: Analytical investigation, *Results in Physics*, 59 (2024) 107602. <https://doi.org/10.1016/j.rinp.2024.107602>. **(IF=5.3) (W, Netherlands)**
9. Amudhini M, Poulomi De, **Aziz Ullah Awan**, Hanadi Alzubadi, Mathematical modeling of cross

- diffusion effect on bioconvective Casson nanofluid over multi slips porous stretching surface, *Numerical Heat Transfer, Part B: Fundamentals*, (2024).  
<https://doi.org/10.1080/10407790.2024.236590>. (IF=1.0) (X, United Kingdom)
10. Haneen Hamam, **Aziz Ullah Awan**, Mohamed Medani, Roobaea Alroobaea, S. A. H. S. Bukhari, Dowlath Fathima, Theoretical analysis of colonic crypt and colorectal cancer model through Caputo–Fabrizio fractional derivative, *Modern Physics Letters B*, (2024), 2450365 (20 pages).  
<https://doi.org/10.1142/S0217984924503652>. (IF=1.948) (X, Singapore)
  11. Syed Asif Ali Shah, N. Ameer Ahammad, Sidra Qayyum, Sohail Nadeem, Hanadi Alzubadi, **Aziz Ullah Awan**, Roobaea Alroobaea, Thermal characterization of Sutterby nanofluid flow under Riga plate: Tiwari and Das model, *Modern Physics Letters B*, (2024), 2450421 (15 pages).  
<https://doi.org/10.1142/S0217984924504219>. (IF=1.948) (X, Singapore)
  12. Asia Ali Akbar, **Aziz Ullah Awan**, Shafiullah Niazi, Sohail Nadeem, N. Ameer Ahammad, Roobaea Alroobaea, Hanadi Alzubadi, Fehmi Gamaoun, Radiation-influenced magnetohydrodynamic third-grade nanofluid flow around non-linearly stretched cylinder, *Journal of Computational Design and Engineering*, 11(3) (2024) 72–90.  
<https://doi.org/10.1093/jcde/qwae009>. (IF=4.9) (W, United Kingdom)
  13. Syed Asif Ali Shah, **Aziz Ullah Awan**, Bagh Ali, Adham E. Ragab, Dynamics of methanol conveying mono and hybrid nanoparticles to optimization of heat transfer across stretching cylinder, *Numerical Heat Transfer, Part A: Applications*.  
<https://doi.org/10.1080/10407782.2024.2343040>. (IF=2) (X, United Kingdom)
  14. Muhammad Hasnain Shahzad, Madiha Akram, Sohail Nadeem, N. Ameer Ahammad, **Aziz Ullah Awan**, Hanadi Alzubadi, Investigation of Prandtl-Eyring fluid flow under the influence of peristalsis through an inclined elliptic channel, *Numerical Heat Transfer, Part A: Applications*, (2024). <https://doi.org/10.1080/10407782.2024.2362347>. (IF=2) (X, United Kingdom)
  15. **Aziz Ullah Awan**, Sidra Shafique, Muhammad Hasnain Shahzad, Kamel Guedri, Basim M. Makhdoum, Sohail Nadeem, Non-Newtonian rheology of blood in elliptical cross-section artery affected by several stenosis: Prandtl fluid model, *Archive of Applied Mechanics*, (2024).  
<https://doi.org/10.1007/s00419-024-02557-x>. (IF=2.8) (W, Germany)
  16. Muhammad Hasnain Shahzad, **Aziz Ullah Awan**, Ali Akgul, Sohail Nadeem, Kamel Guedri, Murad Khan Hassani, Basim M. Makhdoum, Analytical investigation of Carreau fluid flow through a non-circular conduit with wavy wall, *Scientific Reports*, 14 (2024) 2437.  
<https://doi.org/10.1038/s41598-024-52848-0>. (IF=4.996) (W, United Kingdom)
  17. Muhammad Hasnain Shahzad, **Aziz Ullah Awan**, Kamel Guedri, Bandar M. Fadhl, Mowffaq Oreijah, Entropy-based investigation of blood flow in elliptical multi-stenotic artery with hybrid nanofluid in a fuzzy environment: Applications as drug carriers for brain diseases, *Engineering Applications of Artificial Intelligence*, 130 (2024) 107695.  
<https://doi.org/10.1016/j.engappai.2023.107695>. (IF=8.0) (W, United Kingdom)
  18. Asia Akbar Akbar, Muzammil Hussain, **Aziz Ullah Awan**, Sohail Nadeem, Roobaea Alroobaea, Dowlath Fathima, Abdul Hamid Ganie, Magnetized heat transfer visualization through

- computational modeling of third grade fluid via exponentially stretching cylinder, *Modern Physics Letters B*, 38(33) (2024), 2450334 (14 pages). <https://doi.org/10.1142/S0217984924503342>. (IF=1.948) (X, Singapore)
19. Asia Ali Akbar, **Aziz Ullah Awan**, Sohail Nadeem, N. Ameer Ahammad, Nauman Raza, Mowffaq Oreijah, Kamel Guedri, Seham Ayesh Allahyani, Heat transfer analysis of Carreau-Yasuda nanofluid flow with variable thermal conductivity and quadratic convection, *Journal of Computational Design and Engineering*, 11(1) (2024) 99-109. <https://doi.org/10.1093/jcde/qwae009>. (IF=4.9) (W, United Kingdom)
20. Kamel Guedri, Yasir Ramzan, **Aziz Ullah Awan**, Bandar M. Fadhl, Bagh Ali, Mowffaq Oreijah, Rabies-related brain disorders: transmission dynamics and epidemic management via educational campaigns and application of nanotechnology, *European Physical Journal Plus*, 139 (2024) 49. <https://doi.org/10.1140/epjp/s13360-023-04796-3>. (IF=3.758) (W, United States)
21. Hamood Ur Rehman, Muhammad Tehseen, Hameed Ashraf, **Aziz Ullah Awan**, Mohamed R. Ali, Unveiling dynamic solitons in the (2+1)-dimensional Kadomtsev–Petviashvili equation: Insights from fluids and plasma, *Partial Differential Equations in Applied Mathematics*, 9 (2024) 100633. <https://doi.org/10.1016/j.padiff.2024.100633>. (IF=0.0) (X, Netherlands)
22. Xiaoye Ding, Salah Mahmoud Boulaaras, Hamood Ur Rehman, Ifrah Iqbal, **Aziz Ullah Awan**, Iffat Sabir, Unraveling the Dynamic Complexity: Exploring the (3+1)-Dimensional Conformable mKdV-ZK Equation, *Optical and Quantum Electronics*, 56 (2024) 775. <https://doi.org/10.1007/s11082-024-06465-w>. (IF=3.0) (W, United States)
23. Muhammad Asad Ullah, Kashif Ali Khan, Mohamed Hussein, Dowlath Fathima, Roobaea Alroobaea, Nauman Raza, Hassan Ali Ghazwani, **Aziz Ullah Awan**, Numerical simulation on the MHD time-dependent williamson nanouid flow with cross diffusion and heat generation/absorption over a stretching plate, *Modern Physics Letters B*, 38(28) (2024), 2450257 (25 pages). <https://dx.doi.org/10.1142/S0217984924502579>. (IF=1.948) (X, Singapore)
24. Kamel Guedri, Yasir Ramzan, **Aziz Ullah Awan**, Bandar M. Fadhl, Mowffaq Oreijah, Modeling transmission patterns and optimal control through nanotechnology: A case study of malaria causing brain disabilities, *Journal of Disability Research*, 3 (2024) 1-18. <https://doi.org/10.57197/JDR-2023-0061>.
25. Muhammad Hasnain Shahzad, Sohail Nadeem, Hijaz Ahmad, Mohammed Hussein, **Aziz Ullah Awan**, Roobaea Alroobaea, Seham Ayesh Allahyani, Entropy-based analysis of hemodynamics in elliptical arterial flows with non-Newtonian Rabinowitsch fluid, *Modern Physics Letters B*, 38(28) (2024), 2450276 (18 pages). <https://doi.org/10.1142/S0217984924502762>. (IF=1.948) (X, Singapore)
26. Hamood Ur Rehman, Ifrah Iqbal, Mohammad Mirzazadeh, M. S. Hashemi, **Aziz Ullah Awan**, Ahmed M. Hassan, Optical solitons of new extended (3+1) -dimensional nonlinear Kudryashov's equation via -model expansion method, *Optical and Quantum Electronics*, 56 (2024) 279. <https://doi.org/10.1007/s11082-023-05850-1>. (IF=3.0) (W, United States)

27. Muhammad Hasnain Shahzad, Sohail Nadeem, **Aziz Ullah Awan**, Seham Ayesh Allahyani, N. Ameer Ahammad, Sayed M. Eldin, On the steady flow of non-Newtonian fluid through multi-stenosed elliptical artery: A theoretical model, *Ain Shams Engineering Journal*, 15(1) (2024) 102262. <https://doi.org/10.1016/j.asej.2023.102262>. (IF=6) (W, Egypt)

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28. Muhammad Hasnain Shahzad, **Aziz Ullah Awan**, Mechanics of heated Rabinowitsch fluid in elliptic vertical duct: Peristalsis and analytical study, *International Journal of Modern Physics B*, (2023) 2350274. <https://doi.org/10.1142/S0217979223502740>. (IF=1.7) (X, Singapore)
29. Muhammad Hasnain Shahzad, **Aziz Ullah Awan**, Non-Newtonian characteristics of blood flow in a multi-stenosed elliptical artery: A case of sensitivity analysis, *International Journal of Modern Physics B*, 37(19) (2023) 2350182. <https://doi.org/10.1142/S0217979223501825>. (IF=1.7) (X, Singapore)
30. **Aziz Ullah Awan**, Dowlath Fathima, Muhammad Hasnain Shahzad, M.M. Alqarni, Sohail Nadeem, Haneen Hamam, Investigation of Eyring-Powell fluid flow in the elliptical multi-stenosed artery : application of perturbation method via polynomial solutions, *ZAMM - Journal of Applied Mathematics and Mechanics*, (2023) 1-16. <https://doi.org/10.1002/zamm.202300603>. (IF=1.759) (W, Germany)
31. **Aziz Ullah Awan**, Muhammad Usman Khalid, Sohail Nadeem, Muhammad Hasnain Shahzad, N. Ameer Ahammad, Fehmi Gamaoun, Ahmed M. Hassan, Analysis of pulsatile blood flow through elliptical multi-stenosed inclined artery influenced by body acceleration, *Engineering Science and Technology, an International Journal*, 47 (2023) 101545. <https://doi.org/10.1016/j.jestch.2023.101545>. (IF=5.155) (W, Netherlands)
32. **Aziz Ullah Awan**, Bagh Ali, Syed Asif Ali Shah, Mowffaq Oreijah, Kamel Guedri, Sayed M. Eldin, Numerical analysis of heat transfer in Ellis hybrid nanofluid flow subject to a stretching cylinder, *Case Studies in Thermal Engineering*, 49 (2023), 103222. <https://doi.org/10.1016/j.csite.2023.103222>. (IF=6.268) (W, United Kingdom)
33. Yasir Ramzan, **Aziz Ullah Awan**, Muhammad Ozair, Takasar Hussain, Rahimah Mahat, Innovative strategies for Lassa fever epidemic control: a groundbreaking study, *AIMS Mathematics*, 8(12) (2023) 30790–30812. <https://doi.org/10.3934/math.20231574>. (IF=2.2) (W, United States)
34. Hamood Ur Rehman, **Aziz Ullah Awan**, Ahmed M. Hassan, Shagufta Razzaq, Analytical soliton solutions and wave profiles of the (3+1)-dimensional modified Korteweg–de Vries–Zakharov–Kuznetsov equation, *Results in Physics*, 52 (2023) 106769. <https://doi.org/10.1016/j.rinp.2023.106769>. (IF=5.3) (W, Netherlands)
35. Hamood Ur Rehman, **Aziz Ullah Awan**, Sayed M. Eldin, Ifrah Iqbal, Study of optical stochastic Solitons of Biswas-Arshed equation with multiplicative noise, *Aims Mathematics*, 8(9) (2023) 21606–21621. <https://doi.org/10.3934/math.20231101>. (IF=2.2) (W, United States)

36. Muhammad Umair Shahzad, Hamood Ur Rehman, **Aziz Ullah Awan**, Zeeshan Zafar, Ahmed M. Hassan, Ifrah Iqbal, Analysis of the exact solutions of nonlinear coupled Drinfeld–Sokolov–Wilson equation through  $\phi^6$ -model expansion method, *Results in Physics*, 52 (2023) 106771. <https://doi.org/10.1016/j.rinp.2023.106771>. (IF=5.3) (W, Netherlands)
37. Nauman Raza, Ahmad Kamal Khan, **Aziz Ullah Awan**, Kashif Ali Abro, Dynamical aspects of transient electro-osmotic flow of Burgers' fluid with zeta potential in cylindrical tube, *Nonlinear Engineering*, 12 (2023) 20220256. <https://doi.org/10.1515/nleng-2022-0256>. (IF=0.52) (X, Germany)
38. Hamood Ur Rehman, Azka Habib, Kashif Ali, **Aziz Ullah Awan**, Study of Langmuir waves for Zakharov equation using Sardar sub-equation method, *International Journal of Nonlinear Analysis and Applications*, (2023). <http://dx.doi.org/10.22075/ijnaa.2023.27106.3500>. (IF=0.64) (Y, Iran)

### **Published in 2022**

39. Syed Asif Ali Shah, **Aziz Ullah Awan**, Significance of magnetized Darcy–Forchheimer stratified rotating Williamson hybrid nanofluid flow : A case of 3D sheet, *International Communications in Heat and Mass Transfer*, 136 (2022) 106214. <https://doi.org/10.1016/j.icheatmasstransfer.2022.106214>. (IF=7) (W, United Kingdom)
40. **Aziz Ullah Awan**, Syed Asif Ali Shah, Bagh Ali, Bio-convection effects on Williamson nanofluid flow with exponential heat source and motile microorganism over a stretching sheet, *Chinese Journal of Physics*, 77 (2022) 2795-2810. <https://doi.org/10.1016/j.cjph.2022.04.002>. (IF=5) (W, Taiwan)
41. **Aziz Ullah Awan**, Sonia Majeed, Bagh Ali, Liaqat Ali, Significance of nanoparticles aggregation and Coriolis force on the dynamics of Prandtl nanofluid: The case of rotating flow, *Chinese Journal of Physics*, 79 (2022) 264-274. <https://doi.org/10.1016/j.cjph.2022.07.008>. (IF=5) (W, Taiwan)
42. **Aziz Ullah Awan**, N. Ameer Ahammad, Wasfi Shatanawi, Seham Ayesh Allahyani, ElSayed M. Tag-ElDin, Nadeem Abbas, Bagh Ali, Significance of magnetic field and Darcy–Forchheimer law on dynamics of Casson–Sutterby nanofluid subject to a stretching circular cylinder, *International Communications in Heat and Mass Transfer*, 139 (2022) 106399. <https://doi.org/10.1016/j.icheatmasstransfer.2022.106399>. (IF=7) (W, United Kingdom)
43. **Aziz Ullah Awan**, N. Ameer Ahammad, Sonia Majeed, Fehmi Gamaoun, Bagh Ali, Significance of hybrid nanoparticles, Lorentz and Coriolis forces on the dynamics of water based flow, *International Communications in Heat and Mass Transfer*, 135 (2022) 106084. <https://doi.org/10.1016/j.icheatmasstransfer.2022.106084>. (IF=7) (W, United Kingdom)
44. **Aziz Ullah Awan**, Samia Riaz, Maryam Ashfaq, Kashif Ali Abro, A scientific report of singular kernel on the rate type fluid subject to the mixed convection flow, *Soft Computing*, 26 (2022) 475-485. <https://doi.org/10.1007/s00500-022-06913-3>. (IF=4.1) (W, Germany)

45. **Aziz Ullah Awan**, Mashal Aziz, Naeem Ullah, Sohail Nadeem, Kashif Ali Abro, Thermal analysis of oblique stagnation point flow with slippage on second order fluid, *Journal of Thermal Analysis and Calorimetry*, 147 (2022) 3839–3851. <https://doi.org/10.1007/s10973-021-10760-z>. (IF=4.4) (W, Netherlands)
46. **Aziz Ullah Awan**, N. Ameer Ahammad, Bagh Ali, ElSayed M. Tag-ElDin, Kamel Guedri, Fehmi Gamaoun, Significance of thermal phenomena and mechanisms of heat transfer through the dynamics of second-grade micropolar nanofluids, *Sustainability*, 14 (2022) 9361. <https://doi.org/10.3390/su14159361>. (IF=3.9) (W, Switzerland)
47. **Aziz Ullah Awan**, Fahad S. Al-Mubaddel, Sumble Ahmad, Nadeem Abbas and Mohammad Mahtab Alam, Significance of thermal radiation, Lorentz force, and non-Darcian porous medium on the dynamics of second-grade fluid subject to exponential stretching sheet, *Waves in Random and Complex Media*, (2022). <https://doi.org/10.1080/17455030.2022.2111030>. (IF=4.051) (W, United Kingdom)
48. **Aziz Ullah Awan**, Asia Ali Akbar, Haneen Hamam, Fehmi Gamaoun, ElSayed M. Tag El Din, Amal Abdulrahman, Characterization of the induced magnetic field on the third-grade micropolar fluid flow across an exponentially stretched sheet, *Frontiers in Physics*, 10 (2022) 964653. <https://doi:10.3389/fphy.2022.964653>. (IF=3.718) (W, Switzerland)
49. Hamood Ur Rehman, **Aziz Ullah Awan**, ElSayed M. Tag-ElDin, Uzma Bashir, Seham Ayesh Allahyani, Construction of exact solutions for Gilson–Pickering model using two different approaches, *Universe*, 8 (2022) 592. <https://doi.org/10.3390/universe8110592>. (IF=2.9) (X, Switzerland)
50. Muhammad Hasnain Shahzad, **Aziz Ullah Awan**, Salman Akhtar, Sohail Nadeem, Entropy and stability analysis on blood flow with nanoparticles through a stenosed artery having permeable walls, *Science Progress*, 105(2) (2022) 1-34. <https://doi.org/10.1177/00368504221096000>. (IF=2.1) (W, United Kingdom)
51. Asia Ali Akbar, **Aziz Ullah Awan**, Mutasem Z. Bani-Fwaz, ElSayed M. Tag-ElDin, Kamel Guedri, Mansour F. Yassen, Bagh Ali, Linear and quadratic convection significance on the dynamics of MHD Maxwell fluid subject to stretched surface, *Frontiers in Physics*, 10 (2022) 974681. <https://doi:10.3389/fphy.2022.974681>. (IF=3.718) (W, Switzerland)
52. Takasar Hussain, **Aziz Ullah Awan**, Kashif Ali Abro, Muhammad Ozair, Mehwish Manzoor, José Francisco Gómez-Aguilar, and Ahmed M. Galal, A passive verses active exposure of mathematical smoking model : A role for optimal and dynamical control, *Nonlinear Engineering*, 11 (2022) 507-521. <https://doi.org/10.1515/nleng-2022-0214>. (IF=0.52) (X, Germany)
53. Asia Ali Akbar, **Aziz Ullah Awan**, Nadeem Abbas, Significance of SWCNTs and MWCNTs on the dynamics of hybrid nanofluid flow over a stretching surface, *Waves in Random and Complex Media*, (2022). <https://doi.org/10.1080/17455030.2022.2119299>. (IF=4.051) (W, United Kingdom)
54. Hamood-Ur-Rehman, **Aziz Ullah Awan**, Seham Ayesh Allahyani, ElSayed M. Tag-ElDin, Muhammad Ahsan Binyamin, Sadia Yasin, Exact solution of paraxial wave dynamical model



- with Kerr media by using  $\phi_6$  model expansion technique, Results in Physics, 42 (2022) 105975. <https://doi.org/10.1016/j.rinp.2022.105975>. (IF=5.3) (W, Netherlands)
55. Bagh Ali, N. Ameer Ahammad, **Aziz Ullah Awan**, Abayomi S. Oke, ElSayed M. Tag-ElDin, Farooq Ahmed Shah, Sonia Majeed, The dynamics of water-based nanofluid subject to the nanoparticle's radius with a significant magnetic field: The case of rotating micropolar fluid, Sustainability, 14 (2022) 10474. <https://doi.org/10.3390/su141710474>. (IF=3.9) (W, Switzerland)
56. Asia Ali Akbar, N. Ameer Ahammad, **Aziz Ullah Awan**, Ahmed Kadhim Hussein, Fehmi Gamaoun, ElSayed M. Tag-ElDin, Bagh Ali, Insight into the role of nanoparticles shape factors and diameter on the dynamics of rotating water-based fluid, Nanomaterials, 12 (2022) 2801. <https://doi.org/10.3390/nano12162801>. (IF=5.3) (W, Switzerland)
57. Salman Akhtar, Muhammad Hasnain Shahzad, Sohail Nadeem, **Aziz Ullah Awan**, Shahah Almutairi, Hassan Ali Ghazwani, Mohamed Mahmoud Sayed, Analytical solutions of PDEs by unique polynomials for peristaltic flow of heated Rabinowitsch fluid through an elliptic duct, Scientific Reports, 12 (2022) 12943. <https://doi.org/10.1038/s41598-022-17044-y>. (IF=4.996) (W, United Kingdom)
58. Seham Ayesh Allahyani, Hamood Ur Rehman, **Aziz Ullah Awan**, ElSayed M. Tag-ElDin, Mahmood Ul Hassan, Diverse variety of exact solutions for nonlinear Gilson–Pickering equation, Symmetry, 14 (2022) 2151. <https://doi.org/10.3390/sym14102151>. (IF=2.7) (W, Switzerland)
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## Thesis Supervision

### ❖ Ph.D

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12. Miss Mashal Aziz, Some Study of Second Grade Fluid over an Oscillatory Stretching Surface with Slip Effects, 2020.
13. Miss Sana Abid, Magnetohydrodynamics Stagnation Point Flow of Differential Type Fluid, 2020.
14. Mr. Muhammad Aqib Ijaz, Analysis of Free Convection Flow of Casson Fluid with Damped Mass and Thermal Fluxes, 2019.
15. Mr. Mukarram Ali, Electroosmotic Flow of an Oldroyd-B Fluid with Caputo- Fabrizio Fractional Derivative, 2019.
16. Miss Maria Siddique, Qualitative Analysis of Go-Clean Model, 2019.
17. Miss Kiran Mazhar, Free Convective Flow of Electrically Conducting Fluids in the Presence of Magnetic Field, 2018.
18. Attia Sharif, Mathematical Analysis of Smoking Model with Cravings to Smoke, 2017.
19. Mr. Qasim Ali, Qualitative Analysis of Epidemic Model of Measles, 2017.
20. Miss Ummara Iqbal, Mathematical Study on the Transmission of Pine Wilt Disease, 2016.
21. Miss Aneela Shaukat, Chemical Reaction Effect of an Unsteady Incompressible Flow on a Vertical Oscillating Plate, 2016.
22. Mr. Burhan Ul Haq, Free Convection Flow near an Oscillating Vertical Plate, 2015.

## Research Evaluation

### ❖ M.Phil/Ph.D Thesis

The following three Ph.D. Theses are evaluated.

1. Ms. Humaira Bashir, "Computing the 2- Metric Dimension of Graphs" Public defense on October 21, 2022, Department of Mathematics, University of Management and Technology, C-II, Johar Town, Lahore, Pakistan
2. Ms. Rabia Ilyas Butt, "On Stability Analysis of Fractional Difference Equations" Public defense on August 24, 2021, Department of Mathematics, School of Natural Sciences, NUST, Islamabad.
3. Mr. Syed Tauseef Saeed, "The Study of Differential and Rate Type Fluids over Different Surfaces," Public defense on June 25, 2021, Department of Sciences and Humanities, NUCES-FAST, Lahore Campus, Lahore.

More than eighty M. Phil/MS theses evaluated from different universities in Pakistan

### ❖ **Research Papers**

Reviewed Research Papers (Referee) of the following Journals:

- Case Studies in Thermal Engineering
- Scientific Reports
- Ain Shams Engineering Journal
- International Communications in Heat and Mass Transfer
- Nanomaterials; Water; Symmetry; Materials; Polymers; Applied Sciences
- Mathematical Problems
- Arabian Journal of Chemistry
- ZAMM - Journal of Applied Mathematics and Mechanics
- Scientific Journal of King Faisal University: Basic and Applied Sciences
- Journal of Optics
- Optik
- International Communications in Heat and Mass Transfer
- Physica D: Nonlinear Phenomena
- Annals of Mathematics and Physics
- Numerical Heat Transfer, Part A: Applications
- Aims Mathematics
- Journal of Fractional Calculus and Applications
- Canadian Journal of Physics
- Journal of Porous Media
- Physics of Fluids
- International Journal of Thermofluids
- International Journal of Applied and Computational Mathematics
- Physica Scripta
- Nonlinear Dynamics
- Waves in Random and Complex Media
- Computational and Mathematical Methods in Medicine

- Journal of Advanced Physics
- Computational and Mathematical Methods in Medicine
- Inderscience Online
- International Journal of Mathematical, Engineering and Management Sciences
- Helion
- Results in Physics
- Results in Engineering
- Chinese Journal of Physics
- Journal of Ocean Engineering and Science
- Journal of Computational Design and Engineering
- Modern Physics Letters B
- International Journal of Modern Physics B
- Numerical Methods for Partial Differential Equations
- Discover Applied Sciences

## Conferences Attended/Organized

- A Research Paper Presented at in "International Research Discussion on Computational Fluid Dynamics" organized by Division of Mathematics, School of Advanced Sciences, Vellore Institute of Technology, Chennai, India (July 24, 2023).
- Keynote Speaker at "1st International Conference on Mathematics and Applied Sciences, Department of Basic Sciences and Related Studies, Mehran UET (Shaheed Z.A. Bhutto Campus) Khairpur Mir's, Sindh, Pakistan" (March 21-23, 2022).
- A Research Paper Presented at "Two Day 1st International Conference on Pure and Applied Mathematics, Department of Mathematics, GC University, Faisalabad" (February 19-20, 2022).
- Participated in National Conference on Latest Trends in Mathematical Modeling and Simulation for two days at Abdus Salam School of Mathematical Sciences, GC University Lahore, December 14-15, 2021.
- Presented an online seminar entitled "Analysis of Non-Newtonian Fluid Flow" at the University of Education, Jauharabad Campus, November 13, 2021.
- Key Note Speaker at "5th International Conference on Pure and Applied Mathematics, Department of Mathematics, University of Sargodha, Sargodha" (February 24-25, 2020).
- A research paper presented at "6<sup>th</sup> UMT International Conference on Pure and Applied Mathematics, Centre for Mathematics and its Applications, UMT Lahore" (February 21-23, 2020).
- Participated in "Workshop on MATLAB Programming and its Applications in Computing, Department of Mathematics and Statistics, Riphah International University, Islamabad" (August 02-04, 2019).
- A seminar of Prof. Dr. Sohail Nadeem is organized in the Department of Mathematics, University of the Punjab, Lahore, on February 28, 2019.
- Participated in "Workshop on Solitons and its Applications, Department of Mathematics, GC University Lahore" (January 07, 2019).
- A research paper presented at "4th International Conference on Pure and Applied Mathematics, Department of Mathematics, University of Sargodha, Sargodha" (December 21-22, 2018).
- A research paper presented at "2018-International Conference on Mathematics and its Applications, GC University, Lahore" (November 13-15, 2018).

- A research paper presented in “International Conference on Education, University of Education, Lahore” (March 15-17, 2018).
- A research paper presented at “2017 International Conference on Mathematics and its Applications, Department of Mathematics, GC University Lahore” (November 13-15, 2017).
- World Quality Day by QEC, University of the Punjab, Lahore (November 14, 2017).
- A research paper presented at “3<sup>rd</sup> International Conference on Pure and Applied Mathematics, Department of Mathematics, University of Sargodha, Sargodha” (November 10-11, 2017).
- A seminar presented “Centre for Mathematics and its Applications, University of Management and Technology, Lahore” (February 28, 2017).
- Participated in “Advancement in Pure and Applied Mathematics, Govt College University, Faisalabad” (January 24, 2017).
- A talk presented “One day Workshop, Department of Mathematics, University of Malakand” (December 13, 2016).
- A resource person for “One day Workshop, Govt Post Graduate College For women, Satellite Town, Gujranwala” (November 25, 2016).
- International Workshop on Nonlinear Analysis and Applications, UMT Lahore (October 01-03, 2016).
- World Quality Day by QEC, University of the Punjab, Lahore (April 05, 2016).
- 1st UMT Conference on Pure and Applied Mathematics, UMT Lahore (March 2015).
- Organizer, “International Conference on Relativistic Astrophysics” Department of Mathematics, University of the Punjab, Lahore (February 10-14, 2015).
- Indigenous on-Campus Training Program for Management Team, University of the Punjab, Lahore (December 22-26, 2014).
- CASM-PIEAS Workshop on Computational Fluid Dynamics and Scientific Computing (November 8-9, 2013).
- 5th International Conference on Recent Developments in Fluid Mechanics, QAU, Islamabad, Pakistan, 2013.
- 6th International Conference on 21<sup>st</sup> Century Mathematics, ASSMS, Lahore, 2013.
- 5th International Conference on 21<sup>st</sup> Century Mathematics, ASSMS, Lahore, 2011.
- 4th International Conference on 21<sup>st</sup> Century Mathematics, ASSMS, Lahore, 2009.
- 3th International Conference on Recent Developments in Fluid Mechanics, QAU, Islamabad, Pakistan, 2009.
- International Conference on Mathematics, LUMS, Lahore, 2008.
- 3rd International Conference on 21<sup>st</sup> Century Mathematics, ASSMS, Lahore, 2007.
- 1st international conference on relativity, University of the Punjab, Lahore, Pakistan, 2006.
- 1st International Conference on Statistics and Operational Research, University of the Punjab, Lahore, Pakistan, 2006.
- Second World Conference on 21<sup>st</sup> Century Mathematics, ASSMS, Lahore, 2005.

## International Visits

- Department of Mathematics, Taibah University, Madinah, Saudi Arabia (September-October 2017).
- Department of Mathematics, Islamic University of Madinah, Saudi Arabia (September-October 2017).
- Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy (June 2018).

## Services

- Member and resource person, Departmental Self-Assessment Manual, Quality Enhancement Cell, University of the Punjab, Lahore. (2014 – 2019)
- Member, Board of Studies, Department of Mathematics, Govt. College University, Faisalabad (2019-2022)
- Member, Board of Studies, Department of Mathematics, University of Okara, Okara (2019-Present)
- Member, Departmental Library Committee, Department of Mathematics, University of the Punjab, Lahore (2016 – Present)
- Students Advisor, Department of Mathematics, University of the Punjab, Lahore (September 2012 – October 2015)
- In-charge, Students Hostels Affairs, Department of Mathematics, University of the Punjab, Lahore (2013 – 2017) and (2023-Present)
- Member of BS Admission Committee, Department of Mathematics, University of the Punjab, Lahore (2015-2016)
- Member, Departmental Scholarship Committee, Department of Mathematics, University of the Punjab, Lahore (2013 – Present)
- Coordinator for Seminar series held in Department of Mathematics, University of the Punjab, Lahore (2013 – 2015)
- Member, Doctoral Program Committee, Department of Mathematics, University of the Punjab, Lahore (2013 – 2015, 2020 – Present)
- Member of MSc Admission Committee, Department of Mathematics, University of the Punjab, Lahore (2012 – 2014)
- Sports in-charge, Department of Mathematics, University of the Punjab, Lahore (2013 – 2015)
- Member, Board of Studies, Department of Mathematics, University of the Punjab, Lahore (2013 – 2014, 2020 – Present)
- Member, Board of Studies, Department of Mathematics, University of Lahore, (2022 – 2024)
- Member, Departmental Purchase Committee, Department of Mathematics, University of the Punjab, Lahore (2020 – Present)
- Staff Secretary, Department of Mathematics, University of the Punjab, Lahore (2012 – 2013)
- On duty during summer vacations (2012 – 2024)