

Curriculum Vitae

Personal

Name **Dr. Aziz Ullah Awan**
Associate Professor
Address Dept. of Mathematics, University of the Punjab,
Quaid-e-Azam Campus, Lahore, Pakistan.
Date of Birth January 01, 1981.
E-mail aziz.math@pu.edu.pk; auawan2003@yahoo.com
Contact No. +92-42-99231241
WhatsApp No. +92 331 4349477



Academic Qualification

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

Supervised by

Prof. Dr. Constantin Fetecau

Abdus Salam School of Mathematical Sciences, GC 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.

Research Interest

Computational Fluid Dynamics, Soliton Theory, Bio Mathematics.

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.

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 teach the following courses:

- **BS Level**

- Calculus I
- Calculus II
- Vectors & Mechanics (I)
- Vector and Tensor Analysis
- Mechanics
- Ordinary Differential Equations
- Partial Differential Equations
- Analytical Dynamics
- Fluid Mechanics I & II
- Methods of Mathematical Physics
- Special Theory of Relativity
- Quantum Mechanics-I

- **M.Sc Level**

- Mechanics
- Methods of Mathematical Physics
- Fluid Mechanics
- Special Theory of Relativity and Analytical Dynamics
- Electromagnetic Theory

- **M.Phil/Ph.D Level**

- Fluid Dynamics
- Introduction to Bio Mathematics

Conferences Attended/Organized

- 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 “6th 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 “3rd 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 21st Century Mathematics, ASSMS, Lahore, 2013.
- 5th International Conference on 21st Century Mathematics, ASSMS, Lahore, 2011.
- 4th International Conference on 21st 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 21st 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 21st Century Mathematics, ASSMS, Lahore, 2005.

Publications

Published Papers

1. 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=2.813) (X, Switzerland)
2. 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=2.940) (W, Switzerland)
3. **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=6.782) (W, United Kingdom)
4. 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. (X, Germany)
 5. **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=3.957) (W, Taiwan)
 6. M. Hasnain Shahzad, N. Ameer Ahammad, Sohail Nadeem, Seham Ayesh Allahyani, ElSayed M. Tag-ElDin, **Aziz Ullah Awan**, Sensitivity analysis for Rabinowitsch fluid flow based on permeable artery constricted with multiple stenosis of various shapes, *Biomass Conversion and Biorefinery*, (2022). <https://doi.org/10.1007/s13399-022-03311-5>. (IF=4.050) (X, Germany)
 7. 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 ϕ^6 model expansion technique, *Results in Physics*, (2022) 105975. <https://doi.org/10.1016/j.rinp.2022.105975>. (IF=4.565) (W, Netherlands)
 8. Kamel Guedri, N. Ameer Ahammad, Sohail Nadeem, ElSayed M. Tag-ElDin, **Aziz Ullah Awan**, Mansour F. Yassen, Insight into the heat transfer of third-grade micropolar fluid over an exponentially stretched surface, *Scientific Reports*, 12 (2022) 15577. <https://doi.org/10.1038/s41598-022-19124-5>. (IF=4.996) (W, United Kingdom)
 9. Muhammad Umair Shahzad, Hamood Ur Rehman, **Aziz Ullah Awan**, ElSayed M. Tag-ElDin, Attiq Ur Rehman, Motion of particles around time conformal dilaton black holes, *Symmetry*, 14 (2022) 2033. <https://doi.org/10.3390/sym14102033>. (IF=2.940) (W, Switzerland)
 10. Bagh Ali, N. Ameer Ahammad, **Aziz Ullah Awan**, Kamel Guedri, ElSayed M. Tag-ElDin, Sonia Majeed, Dynamics of rotating micropolar fluid over a stretch

surface: the case of linear and quadratic convection significance in thermal management, *Nanomaterials*, 12 (2022), 3100.

<https://doi.org/10.3390/nano12183100>. (IF=5.719) (W, Switzerland)

11. 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)
12. 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=3.889) (W, Switzerland)
13. 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=5.719) (W, Switzerland)
14. **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)
15. 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.org/10.3389/fphy.2022.974681>. (IF=3.718) (W, Switzerland)
16. 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)
17. Syed Asif Ali Shah, N. Ameer Ahammad, Bagh Ali, Kamel Guedri, **Aziz Ullah Awan**, Fehmi Gamaoun, ElSayed M. Tag-ElDin, Significance of bio-Convection, MHD, thermal radiation and activation energy across Prandtl nanofluid flow: A case of stretching cylinder, *International Communications in Heat and Mass Transfer*, 137 (2022) 106299. <https://doi.org/10.1016/j.icheatmasstransfer.2022.106299>. (IF=6.782) (W, United Kingdom)
 18. **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=3.889) (W, Switzerland)
 19. **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.org/10.3389/fphy.2022.964653>. (IF=3.718) (W, Switzerland)
 20. 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=6.782) (W, United Kingdom)
 21. Hamood ur Rehman, **Aziz Ullah Awan**, ElSayed M. Tag-ElDin, Sharifah E. Alhazmi, Mansour F. Yassen, Rizwan Haider, Extended hyperbolic function method for the (2+1)-dimensional nonlinear soliton equation, *Results in Physics*, (2022) 105802. <https://doi.org/10.1016/j.rinp.2022.105802>. (IF=4.565) (W, Netherlands)
 22. Hamood ur Rehman, **Aziz Ullah Awan**, Azka Habib, Fehmi Gamaoun, ElSayed M. Tag El Din, Ahmed M. Galal, Solitary wave solutions for a strain wave equation in a microstructured solid, *Results in Physics*, (2022) 105755. <https://doi.org/10.1016/j.rinp.2022.105755>. (IF=4.565) (W, Netherlands)

23. Syed Asif Ali Shah, N. Ameer Ahammad, ElSayed M. Tag El Din, Fehmi Gamaoun, **Aziz Ullah Awan**, Bagh Ali, Bio-convection effects on Prandtl hybrid nanofluid flow with chemical reaction and motile microorganism over a stretching sheet, *Nanomaterials*, 12 (2022) 2174.
<https://doi.org/10.3390/nano12132174>. (IF=5.719) (W, Switzerland)
24. Muhammad Hasnain Shahzad, **Aziz Ullah Awan**, Salman Akhtar, Sohail Nadeem, Study of blood flow with nanoparticles through a stenosed artery having permeable walls together with entropy and stability analysis, *Science Progress*, 105(2) (2022) 1-34. <https://doi.org/10.1177/00368504221096000>. (IF=1.512) (W, United Kingdom)
25. **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: https://doi.org/10.1016/j.cjph.2022.04.002](https://doi.org/10.1016/j.cjph.2022.04.002). (IF=3.957) (W, Taiwan)
26. **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=6.782) (W, United Kingdom)
27. Hamood Ur Rehman, **Aziz Ullah Awan**, Kashif Ali Abro, ElSayed M. Tag El Din, Sobia Jafar, Ahmed M. Galal, A non-linear study of optical solitons for Kaup-Newell equation without four-wave mixing, *Journal of King Saud University - Science*, 34(5) (2022) 102056.
<https://doi.org/10.1016/j.jksus.2022.102056>. (IF=3.829) (W, Netherlands)
28. Nehad Ali Shah, **Aziz Ullah Awan**, Rabia Khan, Iskander Tlili, M. Umar Farooq, Bashir Salah, Jae Dong Chung, Free convection Hartmann flow of a viscous fluid with damped thermal transport through cylindrical tube, *Chinese Journal of Physics*, 80 (2022) 19-33.
<https://doi.org/10.1016/j.cjph.2021.09.019>. (IF=3.957) (W, Taiwan)
29. Piyu Li, Faisal Z. Duraihem, **Aziz Ullah Awan**, A. Al-Zubaidi, Nadeem Abbas, Daud Ahmad, Heat transfer of hybrid nanomaterials base Maxwell micropolar fluid flow over an exponentially stretching surface, *Nanomaterials*,

- 12 (2022) 1207. <https://doi.org/10.3390/nano12071207>. (IF=5.719) (W, Switzerland)
30. **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=3.732) (W, Germany)
31. Muhammad Ozair, Takasar Hussain, **Aziz Ullah Awan**, Muhammad Tanveer, Kainat Ashfaq, Muhammad Awais, Investigation from sensitivity to optimality for the transmission and detection of pine wilt disease, *The European Physical Journal Plus*, 137 (2022) 258. <https://doi.org/10.1140/epjp/s13360-022-02465-5>. (IF=3.758) (W, United States)
32. **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=4.755) (W, Netherlands)
33. Arshad Riaz, **Aziz Ullah Awan**, Sajad Hussain, Sami Ullah Khan, Kashif Ali Abro, Effects of solid particles on fluid-particulate phase flow of non-Newtonian fluid through eccentric annuli having thin peristaltic walls, *Journal of Thermal Analysis and Calorimetry*, 147(2) (2022) 1645-1656. <https://doi.org/10.1007/s10973-020-10447-x>. (IF=4.755) (W, Netherlands)
34. **Aziz Ullah Awan**, Samia Riaz, Kashif Ali Abro, Ayesha Siddiqa, Qasim Ali, The role of relaxation and retardation phenomenon of Oldroyd-B fluid flow through Stehfest's and Tzou's algorithms, *Nonlinear Engineering - Modeling and Application*, 11 (2022) 35-46. <https://doi.org/10.1515/nleng-2022-0006>. (X, Germany)
35. Takasar Hussain, Muhammad Ozair, Ammara Komal, **Aziz Ullah Awan**, B. Alshahrani, Sayed F. Abdelwahab, Abdel-Haleem Abdel-Aty, Theoretical assessment of cholera disease and its control measures, *Chaos, Solitons and Fractals*, 153 (2021) 111528. <https://doi.org/10.1016/j.chaos.2021.111528>. (IF=9.924)
36. Muhammad Ozair, Takasar Hussain, Kashif Ali Abro, Sajid Jameel, **Aziz Ullah Awan**, Role of pine wilt disease based on optimal control strategy at

- multiple scales: A case study of Korea, *Journal of Biosciences*, 46 (2021) 93. <https://doi.org/10.1038/s41598-020-60088-1>. (IF=2.795)
37. Muhammad Tahir, **Aziz Ullah Awan**, Kashif Ali Abro, Extraction of optical solitons in birefringent fibers for Biswas-Arshed equation via extended trial equation method, *Nonlinear Engineering*, 10(1) (2021) 146–158. <https://doi.org/10.1515/nleng-2021-0011>.
38. Adnan Aslam, Muhammad Ozair, Takasar Hussain, **Aziz Ullah Awan**, Fatima Tasneem, Nehad Ali Shah, Transmission and epidemiological trends of pine wilt disease: Findings from sensitivity to optimality, *Results in Physics*, 26 (2021) 104443. <https://doi.org/10.1016/j.rinp.2021.104443>. (IF=4.565)
39. **Aziz Ullah Awan**, Attia Sharif, Kashif Ali Abro, Muhammad Ozair, Takasar Hussain, Dynamical aspects of smoking model with cravings to smoke, *Nonlinear Engineering*, 10(1) (2021) 91-108. <https://doi.org/10.1515/nleng-2021-0008>.
40. Qasim Ali, Samia Riaz, **Aziz Ullah Awan**, Kashif Ali Abro, A mathematical model for thermography on viscous fluid based on damped thermal flux, *Zeitschrift für Naturforschung A - A Journal of Physical Sciences*, 76(3) (2021) 285-294. <https://doi.org/10.1515/zna-2020-0322>. (IF=1.712)
41. **Aziz Ullah Awan**, Qasim Ali, Samia Riaz, Nehad Ali Shah, Jae Dong Chung, A thermal optimization through an innovative mechanism of free convection flow of Jeffrey fluid using non-local kernel, *Case Studies in Thermal Engineering*, 24 (2021) 100851. <https://doi.org/10.1016/j.csite.2021.100851>. (IF=6.268)
42. **Aziz Ullah Awan**, Muhammad Tahir, Kashif Ali Abro, Multiple soliton solutions with nonlinear Chiral Schrodinger's equation in (2+1)-dimensions, *European Journal of Mechanics / B Fluids*, 85 (2021) 68-75. <https://doi.org/10.1016/j.euromechflu.2020.07.014>. (IF=2.589)
43. **Aziz Ullah Awan**, Hamood Ur Rehman, Muhammad Tahir, Muhammad Ramzan, Optical soliton solutions for resonant Schrodinger equation with anti-cubic nonlinearity, *Optik*, 227 (2021) 165496. <https://doi.org/10.1016/j.ijleo.2020.165496>. (IF=2.84)
44. Takasar Hussain, **Aziz Ullah Awan**, Kashif Ali Abro, Muhammad Ozair, Mehwish Manzoor, A mathematical and parametric study of epidemiological smoking model: a deterministic stability and optimality for solutions, *The*

- European Physical Journal Plus, (2021) 136:11. (IF=3.911)
<https://doi.org/10.1140/epjp/s13360-020-00979-4>.
45. Muhammad Ozair, Takasar Hussain, Mureed Hussain, **Aziz Ullah Awan**, Dumitru Baleanu, Kashif Ali Abro, A mathematical and statistical estimation of potential transmission and severity of COVID-19: A combined study of Romania and Pakistan, BioMed Research International, 2020 (2020) 5607236, 14 pages. <https://doi.org/10.1155/2020/5607236>. (IF=3.411)
46. **Aziz Ullah Awan**, Samia Riaz, Samina Sattar, Kashif Ali Abro, Fractional modeling and synchronization of ferrofluid on free convection flow with magnetolysis, The European Physical Journal Plus, (2020) 135:841. <https://doi.org/10.1140/epjp/s13360-020-00852-4>. (IF=3.911)
47. **Aziz Ullah Awan**, Sana Abid, Nadeem Abbas, Theoretical study of unsteady oblique stagnation point based Jeffrey nanofluid flow over an oscillatory stretching sheet, Advances in Mechanical Engineering, 12(11) (2020) 1-13. <https://doi.org/10.1177%2F1687814020971881>. (IF=1.316)
48. Qasim Ali, Samia Riaz, **Aziz Ullah Awan**, Kashif Ali Abro, Thermal investigation for electrified convection flow of Newtonian fluid subjected to damped thermal flux on a permeable medium, Physica Scripta, 95 (2020) 115003. <https://doi.org/10.1088/1402-4896/abbc2e>. (IF=2.487)
49. J. Romero, **A. U. Awan**, A. Sharif, T. Hussain, M. Ozair, A. Aslam, F. Ali, Analysis of a mathematical model for the pine wilt disease using a graph theoretic approach, Applied Sciences, 22 (2020) 189-204.
50. Qasim Ali, Samia Riaz, **Aziz Ullah Awan**, Free convection MHD flow of viscous fluid by means of damped shear and thermal flux in a vertical circular tube, Physica Scripta, 95 (2020) 095212. <https://doi.org/10.1088/1402-4896/abab39>. (IF=2.487)
51. **Aziz Ullah Awan**, Sana Abid, Naeem Ullah, Sohail Nadeem, Magnetohydrodynamic oblique stagnation point flow of second grade fluid over an oscillatory stretching surface, Results in Physics, 18 (2020), 103233. <https://doi.org/10.1016/j.rinp.2020.103233>. (IF=4.476)
52. **Aziz Ullah Awan**, Muhammad Tahir, Hamood Ur Rehman, Singular and bright singular combo optical solitons in birefringent to the Biswas–Arshed

- equation, *Optik*, 210 (2020) 164489.
<https://doi.org/10.1016/j.ijleo.2020.164489>. (IF=2.443)
53. Muhammad Tahir, **Aziz Ullah Awan**, Optical dark and singular solitons to the Biswas-Arshed equation in birefringent fibers without four-wave mixing, *Optik*, 207 (2020) 164421. <https://doi.org/10.1016/j.ijleo.2020.164421>. (IF=2.443)
54. Muhammad Tahir, **Aziz Ullah Awan**, Mohamed S. Osman, Dumitru Baleanu, Maysaa M. Alqurashi, Abundant periodic wave solutions for fifth-order Sawada-Kotera equations, *Results in Physics*, 17 (2020) 103105. <https://doi.org/10.1016/j.rinp.2020.103105>. (IF=4.476)
55. **Aziz Ullah Awan**, Mukarram Ali, Kashif Ali Abro, Electroosmotic slip flow of Oldroyd-B fluid between two plates with non-singular kernel, *Journal of Computational and Applied Mathematics*, 376 (2020) 112885. <https://doi.org/10.1016/j.cam.2020.112885>. (IF=2.621)
56. Muhammad Ozair, Takasar Hussain, **Aziz Ullah Awan**, Adnan Aslam, Riaz Ahmad Khan, Farhad Ali, Fatima Tasneem, Bio-inspired analytical heuristics to study pine wilt disease model, *Scientific Reports*, 10 (2020) 3534. <https://doi.org/10.1038/s41598-020-60088-1>. (IF=4.379)
57. Muhammad Tahir, **Aziz Ullah Awan**, Optical traveling wave solutions for the Biswas–Arshed model in Kerr and non-Kerr law media, *Pramana Journal of Physics*, (2020) 94:29. <https://doi.org/10.1007/s12043-019-1888-y>. (IF=2.219)
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Thesis Supervision

- **Ph.D**

1. Mr. Qasim Ali, Analysis of Free Convection Flow with Damping for Different Fluids, 2021.
2. Mr. Muhammad Danial Hisham, Unsteady Flows of Newtonian and non-Newtonian Fluids through Rectangular Channels, 2020.
3. Mr. Muhammad Tahir, Analytical Study on Optical Solitons and Exact Traveling Wave Solutions of Nonlinear Partial Differential Equations, 2020.

- **M.Phil**

1. Miss Asia Ali Akbar, Theoretical Investigation of Nanofluids Flow over Stretching Surfaces, 2022.
2. Miss Sonia Majeed, Significance of Hybrid Nanoparticles, Lorentz and Coriolis Forces on the Dynamics of Water Based Flow, 2022.
3. Mr. Syed Azkar Hussain Shah Bukhari, Study of Colonic Crypt and Colorectal Cancer Model through Fractional Derivative, 2022.
4. Mr. Muzammil Hussain, Mathematical Analysis of Non-Newtonian Fluid Flow over a Stretching Surface, 2021.
5. Mr. Farooq Imran, Study of Nanofluid Flow with Variable Viscosity, 2021.
6. Miss Mashal Aziz, Some Study of Second Grade Fluid over an Oscillatory Stretching Surface with Slip Effects, 2020.
7. Miss Sana Abid, Magnetohydrodynamics Stagnation Point Flow of

Differential Type Fluid, 2020.

8. Mr. Aqib Ali, Analysis of Free Convection Flow of Casson Fluid with Damped Mass and Thermal Fluxes, 2019.
9. Mr. Mukarram Ali, Electroosmotic Flow of an Oldroyd-B Fluid with Caputo-Fabrizio Fractional Derivative, 2019.
10. Miss Maria Siddique, Qualitative Analysis of Go-Clean Model, 2019.
11. Miss Kiran Mazhar, Free Convective Flow of Electrically Conducting Fluids in the Presence of Magnetic Field, 2018.
12. Attia Sharif, Mathematical Analysis of Smoking Model with Cravings to Smoke, 2017.
13. Mr. Qasim Ali, Qualitative Analysis of Epidemic Model of Measles, 2017.
14. Miss Ummara Iqbal, Mathematical Study on the Transmission of Pine Wilt Disease, 2016.
15. Miss Aneela Shaukat, Chemical Reaction Effect of an Unsteady Incompressible Flow on a Vertical Oscillating Plate, 2016.
16. 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 sixty M. Phil/MS theses evaluated from different universities in Pakistan

- **Research Papers**

Reviewed Research Papers (Referee) of the following Journals:

- Canadian Journal of Physics
- Journal of Porous Media
- Physics of Fluids
- 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
- Heliyon
- Results in Physics
- Numerical Methods for Partial Differential Equations

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)
- 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, 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 – 2019)