Yusuf Olatunji Tijani PhD

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Personal Website Google Scholar

Current Position

Postdoctoral Research Fellow
Rhodes University, Grahamstown, South Africa.　　　2024 - 2025

Research Interests

1. Numerical analysis and scientific computing
2. Computational fluid dynamics
3. Mathematical modelling (dynamical systems)
4. Machine learning

Education

Department of Mathematics, Nelson Mandela University.　　Port-Elizabeth, South Africa
PhD in Applied Mathematics　　2019 - 2023
- Finite difference methods for Burgers-Huxley equations and biofilm formation.

Department of Mathematics, Obafemi Awolowo University.　　Ile-Ife, Nigeria
MSc in Mathematics　　2015 - 2018

Department of Mathematics, Obafemi Awolowo University.　　Ile-Ife, Nigeria
BSc in Mathematics　　2008 - 2013
- CGPA: 79.8%, Rank: 1/35.

Teaching Experience

Teaching Assistant
Department of Mathematics, Rhodes University, Makhanda, South-Africa.　　2025

Graduate Teaching
Department of Mathematics and Applied Mathematics, Nelson Mandela University, Gqeberha, South-Africa.　　05/2020 - 10/2023

Contract Lecturer
Department of Mathematics and Applied Mathematics, Nelson Mandela University, Gqeberha, South-Africa.　　2021

Mathematics Teacher
Unity Junior College, Agege, Lagos, Nigeria.　　02/2019 - 02/2020

Mathematics Tutor
Department of Mathematics, Obafemi Awolowo University, Ile-Ife, Nigeria.　　05/2016 - 12/2018

Mathematics Lecturer
Department of Mathematics, Obafemi Awolowo University, Parent Assisted Rudimentary Tutorial Programme, Nigeria.　　02/2015 - 04/2016

Student Supervision

Baqiwe Sixolile
Master *(Ongoing), Numerical analysis of pattern formation in reaction-diffusion systems.*

Zintathu Jozela
Honours *(Ongoing), Pseudospectral method on non-overlapping and overlapping partitioned domains.*　　2025

Baqiwe Sixolile
Honours, *Image processing and binarization through non-linear partial differential equations.*　　2024

PEER
REVIEWED
PUBLICATIONS
(SELECTED)

1. **Yusuf Olatunji Tijani**. Sensitivity and numerical simulation of unsteady reactive hydro-magnetic Eyring-Powell flow in a non-horizontal channel. *Multiscale and Multidisciplinary Modeling, Experiments and Design*. 8(305), 2025.

2. Shina Daniel Oloniiju, Nancy Mukwevho, **Yusuf Olatunji Tijani,** and Olumuyiwa Otegbeye. Chebyshev pseudospectral method for fractional differential equations in partitioned domains. *AppliedMath*. 4(3), 950-974, 2024.

3. **Yusuf Olatunji Tijani**, Appanah Rao Appadu, and Adebayo Abiodun Aderogba. Some finite difference methods to model biofilm growth and decay: Classical and non-standard. *Computation (MDPI)*. 9 (11), 123, 2021.

4. **Yusuf Olatunji Tijani,** Mojeed Taiwo Akolade, Olumuyiwa Otegbeye, and Abdulhakeem Yusuf. Surface dynamics on Jeffrey nanofluid flow with Coriolis effect and variable Darcy regime. *ZAMM - Journal of Applied Mathematics and Mechanics*. 104(2) 2024.

5. **Yusuf Olatunji Tijani** and Shina Daniel Oloniiju. Bio-filtration of organic pollutants: simulation and mathematical modelling of toluene and n-propanol. *Chemistry Africa*. 8(1), 357-368, 2024.

6. Shina Daniel Oloniiju, **Yusuf Olatunji Tijani,** and Olumuyiwa Otegbeye. Thermal analysis of extended surface using deep neural network. *Open Physics*. 22 (1), 2024.

7. **Yusuf Olatunji Tijani,** Shina Daniel Oloniiju, Olumuyiwa Otegbeye, and Ajiboye Reginald Babalola. Magnetic feature and regression analysis of Reiner-Philippoff boundary layer flow. *Numerical Heat Transfer, Part B: Fundamentals*. 1–19, 2023.

8. Matthew Oluwafemi Lawal, **Yusuf Olatunji Tijani,** Suraju Olusegun Ajadi, and Kazeem Babawale Kasali. Simulation of the laminar thermal boundary layer problem over a flat plate by exploring the local non-similarity technique. *International Journal of Modelling and Simulation*. 1–12, 2023.

9. **Yusuf Olatunji Tijani** and Appanah Rao Appadu. Unconditionally positive NSFD and classical finite difference schemes for biofilm formation on medical implant using Allen-Cahn equation. *Demonstratio Mathematica*. 55 (1), 40-60, 2022.

10. Kazeem Babawale Kasali, Saheed Ojo Akindeinde, **Yusuf Olatunji Tijani**, Adebayo Olusegun Adewumi, and Ramoshweu Solomon Lebelo. Thermal and multi-boiling analysis of a rectangular porous fin: A spectral approach. *Nonlinear Engineering Journal*, 2022.

11. **Yusuf Olatunji Tijani,** Shina Daniel Oloniiju, Kazeem Babawale Kasali and Mojeed Taiwo Akolade. Nonsimilar solution of a boundary layer flow of a Reiner–Philippoff fluid with nonlinear thermal convection. *Heat Transfer*, 51(6), 5659-5678, 2022.

12. Appanah Rao Appadu, Abey Kelil and **Yusuf Olatunji Tijani**. Comparison of some forecasting methods for COVID-19. *Alexandria Engineering Journal*. 60(1), 1565-1589, 2021.

13. Appanah Rao Appadu, **Yusuf Olatunji Tijani** and Adebayo Abiodun Aderogba. On the performance of some NSFD methods for a 2-D generalized Burgers–Huxley equation *Journal of Difference Equations and Applications*. 27(11), 1537-1573, 2021.

14. Mojeed Taiwo Akolade and **Yusuf Olatunji Tijani**. A comparative study of three dimensional flow of Casson-Williamson nanofluids past a Riga plate: Spectral quasi-linearization approach. *Partial Differential Equation in Applied Mathematics*, 2021.

AWARDS
AND
HONOURS

- **Top Downloaded Article**, Heat Transfer, 2022 - WILEY. 03/2024
- **Postdoctoral Research Fellowships**, Rhodes University. 10/2023, 09/2024
- **COVID-19 Research Grant**, Nelson Mandela University. 09/2020
- **Best Graduating Student**, Faculty of Science Prize for 2011/2012 Session. 12/2014
- **Best all round performance**, Professor (Chief) Reuben Olafenwa Ayeni Memorial Prize for 2011/2012 Session. 12/2014
- **Best all round**, Agege Primary School End of the year award. 12/2000

CONFERENCES AND WORKSHOPS

The 46th Annual South African Symposium on Numerical & Applied Mathematics (SANUM) | University of Witwatersrand, South Africa.   04/2025

67th Annual Congress of the South African Mathematical Society (SAMS) | University of Pretoria, South Africa.   12/2024

16th Annual Workshop on Computational Mathematics and Modelling | University of KwaZulu-Natal, Pietermaritzburg Campus, South Africa.   06/2024

The 45th Annual South African Symposium on Numerical & Applied Mathematics (SANUM) | University of Stellenbosch, South Africa.   04/2024

14th Annual Workshop on Computational Mathematics and Modelling | University of KwaZulu-Natal, Pietermaritzburg Campus, South Africa.   06/2022

18th International Conference of Numerical Analysis and Applied Mathematics (ICNAAM) | Rhodes, Greece.   09/2020

63rd Annual Congress of the South African Mathematical Society (SAMS) | North-West University, South Africa.   12/2020

36th Annual Conference of the Nigerian Mathematical Society (NMS) | University of Agriculture, Makurdi, Nigeria.   06/2017

35th Annual Conference of the Nigerian Mathematical Society (NMS) | Federal University of Technology, Minna, Nigeria.   05/2016

SKILLS

Languages: English, Yoruba, IsiXhosa (Beginner), Arabic (Beginner).

Programming: MATLAB, Maple, Python, Julia(Beginner).

Typesetting: LaTeX, Microsoft Office, Overleaf.

PRESENTATIONS

Numerical Methods: The unsung heros of scientific computing | Seminar series in the Department of Mathematics, Rhodes University, Makhanda, South Africa.   05/2025

Sensitivity and numerical simulation of unsteady reactive hydromagnetic Eyring-Powell flow in a non-horizontal channel. | 46th South African Numerical and Applied Nathematics (SANUM) 2025, University of the Witwatersrand, South Africa   04/2023

Adaptive multidomain numerical solution for singularly perturbed fractional differential equation: Chebyshev pseudospectral method | 67th Annual Congress of the South African Mathematical Society (SAMS), University of Pretoria, South Africa.   12/2024

Exploring fluid dynamics: The role of Mathematicians | Seminar series in the Department of Mathematics, Rhodes University, Makhanda, South Africa.   08/2024

Thermal analysis of extended surfaces using deep neural networks. | 16th Annual Workshop on Computational Mathematics and Modelling (WOCCOM2024), University of Kwazulu-Natal, South Africa.   06/2024

Finite difference method for Burgers-Huxley equation and biofilm formation. | Department of Mathematics and Applied Mathematics, Nelson Mandela University, Gqeberha, South Africa.   11/2022

On the numerical solution of 2D Burgers-Huxley equation using NSFD and classical methods | 18th International Conference of Numerical Analysis and Applied Mathematics (ICNAAM), Rhodes, Greece.   09/2020

An oscillatory MHD convection flow past an infinite vertical porous plate with variable suction, radiation and heat generation in the presence of chemical reaction | 35th Annual Conference of the Nigerian Mathematical society, Federal University of Technology, Minna, Nigeria.   06/2016

PROFESSIONAL AFFILIATIONS

South Africa Mathematical Society (SAMS): Member.

Nigerian Mathematical Society (NMS): Member.

American Mathematical Society (AMS): Member.

REFEREES

Dr. Shina Daniel Oloniiju

Department of Mathematics, Rhodes University, South Africa.
E-mail - s.oloniiju@ru.ac.za, Tel: +27 640300986.

Professor Suraju Olusegun Ajadi

Department of Mathematics, Obafemi Awolowo University, Ile-Ife, Nigeria.
E-mail - soajadi@yahoo.co.uk, Tel: +234 8030545990.

Dr. Olumuyiwa Otegbeye

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E-mail - olumuyiwa.otegbeye@wits.ac.za, Tel: +27 733444196.

Professor Samuel Segun Okoya

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