Hammed O. Fatoyinbo

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Research Interests

Mathematical physiology, dynamical systems, applied statistics, disease modelling

Education

2017–2021	Ph.D. in Appied Mathematics, Massey University , New Zealand
	Thesis Title: *Pattern formation in Electrically Coupled Pacemaker Cells*
	Advisors: Dr. Richard G. Brown, Dr. David J. W. Simpson and Assoc. Prof. Bruce van Brunt
2013–2014	M.Sc. in Mathematical Sciences, African Institute for Mathematical Sciences, Ghana
2008–2012	B.Tech. in Industrial Mathematics, Federal University of Technology, Akure Nigeria
2006–2008	Diploma in Statistics, Federal Polytechnic, Ede, Nigeria

Employment History

2021–Present	Research Officer, Massey University, New Zealand
2019–2021	Academic Assistant, Massey University, New Zealand
2017–2020	Graduate Assistant in Mathematics, Massey University, New Zealand
2015–2016	Instructor, Mathematics and Physics, Al-Hikmat Science College, Nigeria
2011	Data Analyst, Statistics Department, Lagos State Ministry of Education Ikeja
2008–2010	Teaching, D'Professional Academia, Lagos Nigeria

Teaching Experience

2020	106.104, Introductory Mathematics for Science	Massey University
2020	115.114, Finance Fundamentals	Massey University
2020	161.140, Agri-Statistics	Massey University
2019	247.001, Foundation Mathematics 1	Massey University
2019	161.101, Statistics for Business	Massey University
2018	160.203, Calculus II	Massey University
2016	High School, Mathematics and Physics	Al-Hikmat Science College
2015	Intermediate Mathematics	Al-Hikmat Science College
2013	Foundation Mathematics	Obafemi Awolowo University

Honours and Awards

2019	**ANZIAM Poster Prize**, New Zealand Mathematical Society Colloquium
2019	**Special Recognition Award**, Massey University Student Association
2017–2020	**PhD Tuition Scholarship**, School of Fundamental Sciences, Massey University
2013	**MSc Scholarship**, African Institute of Mathematical Sciences
2012	**Best Graduating Student**, Department of Mathematics, Federal University of Technology, Akure
2008–2012	**Deans List** (7 of 8 Semesters), Federal University of Technology, Akure
2012	**Branding FUTA award**, Federal University of Technology, Akure
2012	**Silver Medal**, National Mathematics Competition for University Students
2011	**Branding FUTA award**, Federal University of Technology, Akure
2011	**Bronze Medal**, National Mathematics Competition for University Students
2008	**Best Graduating Student**, Department of Mathematics and Statistics, Federal Polytechnic Ede
2007	**Polytechnic Scholar**, Federal Polythecnic Ede

Travel Awards

2021 **SIAM Student Travel Award**

To attend SIAM Conference on Applications of Dynamical Systems (DS21)

2020 **School of Fundamental Sciences Postgraduate Travel Award**

To attend and present contributed talk at the ANZIAM Conference, Hunter Valley, Australia

2019 **ANZIAM Travel Grant**

To attend the Mathematics in Industry at the University of Auckland

2019 **NZMRI Travel Grant**

To attend NZMRI summer school, Waikanae

2018 **Institute of Fundamental Sciences Travel Award**

To attend and present contributed talk at the NZMS Colloquium, Dunedin, New Zealand

2017 **Institute of Fundamental Sciences Postgraduate Travel Award**

To attend NZMS Colloquium at the University of Auckland

Research Experience

[1] **Fatoyinbo, H. O.** (2014). *Solitons*. M.Sc. Dissertation. African Institute for Mathematical Sciences, Ghana. Advised by Prof. Patrick Dorey

[2] **Fatoyinbo, H. O.** (2012). *Optimal Variable Thermal Conductivity Algorithm for Temperature Distribution in Laptop Computers*. B.Tech. Dissertation. Federal University of Technology, Akure. Supervised by Dr. Adeshina I. Adekunle

Publications

Peer-reviewed Papers

[1] **Fatoyinbo, H. O.**, Brown, R. G., Simpson, D. J. W., & van Brunt, B. Numerical Bifurcation Analysis of Pacemaker Dynamics in a Model of Smooth Muscle Cells. *Bull. Math. Biol.*, 82:95, (2020). Print

Conference Proceeding

[1] A. Abidemi, **H. O. Fatoyinbo**, & J. K. K. Asamoah, Analysis of Dengue Fever Transmission Dynamics with Multiple Controls: A Mathematical Approach, 2020 International Conference on Decision Aid Sciences and Application (DASA), Sakheer, Bahrain, 2020, pp. 971-978. Print

Preprints

[1] **Fatoyinbo, H. O.**, Sishu S. M. & Abidemi A. *Influence of Sodium Inward Current on Dynamical Behaviour of Modified Morris-Lecar Model* (Submitted). arxiv version

Manuscripts in Progress

[1] **Fatoyinbo, H. O.**, Brown, R. G., Simpson, D. J. W., & van Brunt, B. *Effects of Ion Conductances on Pacemaker Dynamics in Excitable Cell*s.

[2] **Fatoyinbo, H. O.**, Brown, R. G., Simpson, D. J. W., & van Brunt, B. *Spatiotemporal Chaos in Electrically Coupled Pacemaker Smooth Muscle Cells.*

[3] Abidemi, A. **Fatoyinbo, H. O.**, & Asamoah, J. K. K, & *Global stability and optimal control of dengue disease transmission with asymptomatic carriers.*

Contributed Talks

[1] **Fatoyinbo, H. O.**, Brown, R. G., Simpson, D. J. W., & van Brunt, B. Stability of Travelling Waves in a Model of Pacemaker Cells. Australian and New Zealand Industrial and Applied Mathematics Conference (Virtual), February 2021.

[2] **Fatoyinbo, H. O.** Stability Analysis of Traveling Wave Solutions in a Model of Coupled Pacemaker Cells, New Zealand Mathematics and Statistics Postgraduate Conference, University of Auckland, New Zealand, November 2020.

[3] **Fatoyinbo, H. O.**, Abidemi, A., & Muni, S. S. Influence of sodium inward current on dynamical behaviour of modified Morris–Lecar model. The 16th Annual UNCG Regional Mathematics and Statistics Conference. Abstract.

[4] Abidemi, A., **Fatoyinbo, H. O.**, & Asamoah, J. K. K. Analysis of Dengue Fever Transmission Dynamics with Multiple Controls: A Mathematical Approach. 2020 International Conference on Decision Aid Sciences and Application (DASA). Abstract.

[5] **Fatoyinbo, H. O.**, Brown, R. G., Simpson, D. J. W., & van Brunt, B. Spatiotemporal Dynamics in Spontaneous Excitable Cells. Society for Mathematical Biology virtual Annual Meeting, eSMB2020, August 2020. Abstract.

[6] **Fatoyinbo, H. O.**, Brown, R. G., Simpson, D. J. W., & van Brunt, B. Spatiotemporal Pattern Formation in a Model of Electrically Coupled Smooth Muscle Cells. Australian and New Zealand Industrial and Applied Mathematics Conference, Hunter Valley, NSW, Australia, February 2020.

[7] **Fatoyinbo, H. O.**, Brown, R. G., Simpson, D. J. W., & van Brunt, B. Spatiotemporal Pattern Formation in a Model of Electrically Coupled Smooth Muscle Cells. New Zealand Mathematical Society Colloquium, Massey University, Palmerston North, New Zealand, December 2019. NZMS2019.

[8] **Fatoyinbo, H. O.** Is there CHAOS in the brain?. 3MT Competition, Massey University, July 2019.

[9] **Fatoyinbo, H. O.**, Brown, R. G., Simpson, D. J. W., & van Brunt, B. Emergence of Spatiotemporal Patterns in Pacemaker Coupled Excitable Cells. New Zealand Mathematical Society Colloquium, University of Otago, Dunedin, New Zealand, December 2018. NZMS2018.

[10] **Fatoyinbo, H. O.** Pattern Formation in Pacemaker Dynamics of Coupled Excitable Cells, New Zealand Mathematics and Statistics Postgraduate Conference, Waikanae, New Zealand, November 2018.

[11] **Fatoyinbo, H. O.** Pattern Formation in a Reaction-Diffusion Systems, Postgraduate Seminar, School of Fundamental Sciences, New Zealand, October 2017.

[12] **Fatoyinbo, H. O.** Solitons (oral presentation), Student Seminar, African Institute of Mathematical Sciences, Ghana, November 2013.

Posters

[1] **Fatoyinbo, H. O.**, Brown, R. G., Simpson, D. J. W., & van Brunt, B. Spatiotemporal Chaos: Complex Dynamics in a Model of Coupled Smooth Muscle Cells. Dynamics Days Europe, August 2020. link-poster

[2] **Fatoyinbo, H. O.** Pattern Formation in Gap-junction Coupled Smooth Muscle Cells. Mathematical Models in Biology: from Information Theory to Thermodynamics (Online), July 2020. link-poster

[3] **Fatoyinbo, H. O.**, Brown, R. G., Simpson, D. J. W., & van Brunt, B. Spatiotemporal Pattern Formation in a Model of Electrically Coupled Smooth Muscle Cells. Poster session presented at the 2019 New Zealand Mathematical Society Colloquium, Massey University, Palmerston North, New Zealand. link-poster

Other Conferences and Workshops

2021	Dynamical Systems Applied to Biology and Natural Sciences, BCAM (Virtual)
2020	Winter School on Quantitative Systems Biology: Quantitative Approaches in Ecosystem Ecology, ICTP (Virtual)
2020	Digital International Conference on Advances in Computational Methods (Online)
2020	AMSI-ANZIAM Early Career Workshop, Hunter Valley, NSW Australia.
2019	Mathematics in Industry New Zealand, University of Auckland.
2019	Capacity Development Training, The Federation of Islamic Associations of New Zealand, Auckland.
2019	NZ Mathematics Research Institute Summer School, Waikanae.
2017	New Zealand Mathematics Colloquium, University of Auckland.
2017	Mathematics in Industry New Zealand, Massey University.
2014	Institute of Mathematical Sciences Regional Conference, University of Cape Coast.
2014	Entrepreneurship for Scientists and Engineers in West Africa, African Institute for Mathematical Sciences, Ghana.
2013	Nigerian Mathematical Society Annual Conference, Obafemi Awolowo University, Ile-Ife

Professional Organisations

- Society for Mathematical Biology (SMB), *since 2020*
- New Zealand Mathematical Society (NZMS), *since 2018*.
- Australian and New Zealand Industrial and Applied Mathematics (ANZIAM), *since 2018*.
- Society for Industrial and Applied Mathematics (SIAM), *since 2017*.

Computer Language Capabilities

Matlab, Python, LaTeX, XppAut, AUTO, Matcont, Microsoft office

Community and Volunteer Services

2019	NZ Rural Games, Kelly Sport, Palmerston North
2018	NZ Racketlon Championship, Racketlon NZ , Palmerston North
2017	National Secondary School Volleyball Championships, Sport Manawatu
2017	Te Apiti Whanau Challenge, Sport Manawatu
2015	School Outreach, Biriwa Village, Ghana

Leadership and Other Services

- Workshop Co-organiser, Introduction to LaTeX, School of Fundamental Sciences, Massey University, 2020.
- Jugde, SCUDEM V 2020, SIMIODE
- Workshop Organiser, Introduction to LaTeX, Massey Muslim Society, Massey University, 2019.
- Marker and Reviewer, Massey University Mathematics and Statistics (M3S) Quiz, School of Fundamental Sciences, 2019.
- Conference Co-organiser, New Zealand Mathematics and Statistics Postgraduate Conference, Massey University, 2018.
- President, Massey Muslim Society , Massey University, 2018.
- Student Volunteer, Massey University Mathematics and Statistics (M3S) Quiz, School of Fundamental Sciences, 2018.
- Student Volunteer, Professional & Continuing Education (PaCE) , Massey University, 2017
- President, Muslim Corpers Association of Nigeria, Kogi State, Nigeria, 2016.
- Member, Drug Free Club, National Youth Service Corps Kogi State, 2016.

- Financial Secretary, Mathematics Students Association, Federal University of Technology, Akure, 2011.
- Chief Clerk, Statistics Students Association, Federal Polytechnic, Ede, 2006.

Referees

Dr. Richard G. Brown
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Dr David J. W. Simpson
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A. Prof. Bruce van Brunt
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Prof. Patrick Dorey
Department of Mathematical Sciences
Durham University, United Kingdom
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