Stephen E. Moore

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University of Cape Coast

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RESEARCH

Interests: numerical analysis · applied mathematics · partial differential equations · artificial intelligence · discontinuous galerkin methods · isogeometric analysis · space-time methods · surface pdes

Areas: Modeling and Simulation · Public Health, Environmental and Occupational Health · Global and Planetary Change · Water Science and Technology · Artificial Intelligence · Environmental Engineering

RESEARCH SUMMARY

49	1,103	15	22	3.46	41%
Publications	Citations	h-index	i10-index	Field-weighted impact	World top 10%

Counted from the 49 publications listed below, 2011–2026. Field-weighted impact is the mean over the 32 works scored for it; 1.00 is the world average for works of the same field, type and year. 13 of the 32 papers scored for it are among the world's most cited tenth for their field, type and year.

POSITIONS

Senior Lecturer 2021–present
Mathematics, University of Cape Coast, Cape Coast, Ghana

Lecturer 2018–2021
Mathematics, University of Cape Coast, Cape Coast, Ghana

Project Manager & Testing and Validation Engineer 2018–2019
Research and Development, Engineering Software Steyr, Steyr, Austria

Product Development Engineer 2017–2018
Exploration and Production, Rohöl-Aufsuchungs Aktiengesellschaft, Wien, Austria

Research Engineer 2016
Research and Development, Prozess Optimal Engineering, Graz, Austria

Research Scientist 2012–2016
Computational Mathematics, Johann Radon Institute for Computational and Applied Mathematics, Linz, Austria

EDUCATION AND QUALIFICATIONS

Ph.D 2012–2017
Institute of Computational Mathematics, Johannes Kepler Universität Linz, Linz, Austria

Master of Science 2010–2011
Institute of Computational Mathematics, Johannes Kepler University of Linz, Linz, Austria

M.Sc. 2008–2010
Industrial Mathematics, Technische Universität Kaiserslautern, Kaiserslautern, Germany

B.Sc. 2003–2007
Mathematics, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

DISTINCTIONS, MEMBERSHIPS AND SERVICE

European Mathematical Society 2020–present
Berlin, Germany

Young Scientist Award 2019
RUFORUM, Kampala, Uganda

Best College Level Researcher Award 2019
Directorate of Research and Innovation Center, University of Cape Coast, Cape Coast, Ghana

Full Member 2019–present
Mathematics, Ghana Science Association, Accra, Ghana

Member 2018–present
University Teachers Association of Ghana, Cape Coast, Ghana

Society for Industrial and Applied Mathematics 2008–present
Philadelphia, United States

Member 2017–2019
Österreichische Mathematische Gesellschaft, Wien, Austria

PUBLICATIONS

Journal articles 42

1. **Stephen Moore** (2026). Debt—The First 100 Years: Fiscal Sustainability in Ireland 1924–2023. *The Manchester School*. https://doi.org/10.1111/manc.70031
2. Munkaila Dasumani, Suzanne Lenhart, Gladys K. Onyambu, **Stephen E. Moore** (2026). Discrete-time optimal control of species augmentation for predator–prey model. *The Journal of Difference Equations and Applications*. https://doi.org/10.1080/10236198.2026.2621211
3. George Tackie, Justina Adams, **Stephen E Moore** (2026). Paving an Extractive Path? Infrastructure, Human Capital and Environmental Pressure in Sub-Saharan Africa. *Infrastructure, Human Capital and Environmental Pressure in Sub-Saharan Africa (September 25, 2026)*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7536503
4. Enyam K.A. Morny, Emmanuel Adator, Carl Halladay Abraham, Dillys A.D. Amega, Solomon Edziah, Fidelis Kuebutornye, Kojo Essel-Amoah, Stephen Ocansey, Charles Darko-Takyi, Michael Ntodie, Selina Holdbrook, Obed Amoah-Smith, **Stephen Moore**, Louise Terry (2026). Profiling visual health of young adults in Ghana: a university-based eye screening survey. *Data in Brief*. https://doi.org/10.1016/j.dib.2026.113202
5. Michael O. Adu, Francis Kumi, Peter B. Obour, Emmanuel Arthur, Eric Oppong Danso, Samuel Banafo, Kofi Atiah, Kwadwo K. Amoah, Paul A. Asare, Joel Asiedu, Donatus B. Angnuureng, **Stephen E. Moore** (2026). Root system architecture and shoot canopy effects drive erosion control in Napier and Vetiver grasses. *Ecological Engineering*. https://doi.org/10.1016/j.ecoleng.2026.108126
6. Akwasi Asare, Mary Sagoe, Justice Williams Asare, **Stephen E. Moore** (2026). TransUNet-GradCAM: a hybrid transformer-U-Net with self-attention and explainable visualizations for foot ulcer segmentation. *BMC Medical Imaging*. https://doi.org/10.1186/s12880-026-02793-3
7. **Stephen Edward Moore** (2025). Analysis of a fractional-order model for acute and chronic hepatitis-B transmission with Mittag-Leffler kernels. *Computational and Mathematical Biophysics*. https://doi.org/10.1515/cmb-2025-0021
8. Munkaila Dasumani, Sianou Ezéckiel Houénafa, Gohouede Lionel Cédric, Binandam S. Lassong, **Stephen E. Moore** (2025). Deterministic and stochastic models for analyzing the dynamics of diabetes mellitus. *Partial Differential Equations in Applied Mathematics*. https://doi.org/10.1016/j.padiff.2025.101202
9. Szymon Mazurek, **Stephen Moore**, Alessandro Crimi (2025). Graph Attention Networks for Detecting

Epilepsy From EEG Signals Using Accessible Hardware in Low-Resource Settings. *IEEE Open Journal of Engineering in Medicine and Biology*. https://doi.org/10.1109/ojemb.2025.3642070

10. Sianou Ezéckiel Houénafa, Olatunji Johnson, Erick K. Ronoh, **Stephen E. Moore** (2025). Hybridization of stochastic hydrological models and machine learning methods for improving rainfall-runoff modeling. *Results in Engineering*. https://doi.org/10.1016/j.rineng.2025.104079
11. Sianou Ezéckiel Houénafa, Erick K. Ronoh, Olatunji Johnson, **Stephen E. Moore** (2025). Lévy-induced stochastic differential equation models in rainfall–runoff systems for assessing extreme hydrological event risks. *Stochastic Environmental Research and Risk Assessment*. https://doi.org/10.1007/s00477-025-02931-3
12. Michael Asamani Pobbi, Samuel Mindakifoe Naandam, **Stephen Edward Moore** (2025). Mathematical Modelling and Analysis of Stochastic COVID-19 and Hepatitis B Co-Infection Dynamics. *COVID*. https://doi.org/10.3390/covid5110183
13. Michael A. Pobbi, Samuel M. Naandam, **Stephen E. Moore** (2025). Mathematical modelling and analysis of stochastic malaria and COVID-19 co-infection model. *Applied Mathematics in Science and Engineering*. https://doi.org/10.1080/27690911.2025.2478041
14. Sianou Ezéckiel Houénafa, Olatunji Johnson, Erick K. Ronoh, **Stephen E. Moore** (2025). Multi-step ahead streamflow and uncertainty forecasting using a HyMoLAP rainfall-runoff model-based framework integrated with Bayesian neural networks in the Ouémé river basin, Benin. *PLoS ONE*. https://doi.org/10.1371/journal.pone.0333590
15. Munkaila Dasumani, Suzanne Lenhart, Gladys K. Onyambu, **Stephen E. Moore** (2025). Optimal control of species augmentation in a competition model. *Mathematical Biosciences*. https://doi.org/10.1016/j.mbs.2025.109394
16. Michael O. Adu, Peter B. Obour, Francis Kumi, Emmanuel Arthur, Paul A. Asare, Eric Oppong Danso, Samuel A. Banafo, Kwabena A. Sanleri, Hygienus Godswill, Kofi Atiah, Kwadwo K. Amoah, Joel B.K. Asiedu, **Stephen E. Moore**, Donatus B. Angnuureng (2025). Soil reinforcement potential of multifunctional crop plants on arable and non-arable tropical soils. *Geoderma*. https://doi.org/10.1016/j.geoderma.2025.117470
17. Sianou Ezéckiel Houénafa, Olatunji Johnson, Erick K. Ronoh, **Stephen E. Moore** (2025). Streamflow prediction with aleatoric uncertainty quantification in the Yala river basin via Fokker–Planck equation-based frameworks. *Journal of Hydrology Regional Studies*. https://doi.org/10.1016/j.ejrh.2025.102921
18. **Stephen E Moore** (2024). A nonlinear fractional fishery resource system model with Crowley–Martin functional response under Mittag–Leffler kernel. *Results in Control and Optimization*. https://www.sciencedirect.com/science/article/pii/S2666720724000912
19. Munkaila Dasumani, Binandam S. Lassong, Ali Akgül, Shaibu Osman, **Stephen E. Moore** (2024). Analyzing the dynamics of human papillomavirus transmission via fractal and fractional dimensions under Mittag-Leffler Law. *Modeling Earth Systems and Environment*. https://doi.org/10.1007/s40808-024-02143-8
20. Isaac C. H. Fung, Gerardo Chowell, Gloria A. Botchway, Jing Kersey, Joyce Komesuor, Kin On Kwok, **Stephen E. Moore**, Sylvia K. Ofori, Frank Baiden (2024). Bridging the gap: Empirical contact matrix data is needed for modelling the transmission of respiratory infections in West Africa. *Tropical Medicine & International Health*. https://doi.org/10.1111/tmi.14063
21. **SE Moore** (2024). Determining the effect of contaminated environment and direct transmission on the dynamics of monkeypox virus. *Commun. Math. Biol. Neurosci.* https://scholar.google.com/scholar?cluster=15203963744976138943&hl=en&oi=scholarr
22. Munkaila Dasumani, Binandam S. Lassong, Isaac K. Adu, Fredrick A. Wireko, **Stephen E. Moore** (2024). Fractional Derivative Technique for Modeling the Dynamics of Social Media Impacts. *Discrete Dynamics in Nature and Society*. https://doi.org/10.1155/2024/5578416
23. Walter Okongo, Jeconia Okelo Abonyo, Duncan Kioi, **Stephen Edward Moore**, Stanley Nnaemeka Aguegboh (2024). Mathematical modeling and optimal control analysis of Monkeypox virus in contaminated environment. *Modeling Earth Systems and Environment*. https://doi.org/10.1007/s40808-024-01987-4

24. Binandam S. Lassong, Munkaila Dasumani, Joseph K. Mung'atu, **Stephen E. Moore** (2024). Power and Mittag–Leffler laws for examining the dynamics of fractional unemployment model: A comparative analysis. *Chaos Solitons & Fractals X*. https://doi.org/10.1016/j.csfx.2024.100117

25. Walter Okongo, Jeconia Abonyo Okelo, Duncan Kioi Gathungu, **Stephen Edward Moore**, Stanley Aguegboh Nnaemeka (2024). Transmission Dynamics of Monkeypox Virus With Age-Structured Human Population: A Mathematical Modeling Approach. *Journal of Applied Mathematics*. https://doi.org/10.1155/2024/9173910

26. Theophilus Kwofie, Matthias Dogbatsey, **Stephen E. Moore** (2023). Curtailing crime dynamics: A mathematical approach. *Frontiers in Applied Mathematics and Statistics*. https://doi.org/10.3389/fams.2022.1086745

27. Francis Kumi, Peter B. Obour, Emmanuel Arthur, **Stephen E. Moore**, Paul A. Asare, Joel Asiedu, Donatus B. Angnuureng, Kofi Atiah, Kwadwo K. Amoah, Shadrack K. Amponsah, Selorm Y. Dorvlo, Samuel Banafo, Michael O. Adu (2023). Quantifying root-induced soil strength, measured as soil penetration resistance, from different crop plants and soil types. *Soil and Tillage Research*. https://doi.org/10.1016/j.still.2023.105811

28. Michael O. Opoku, Eric N. Wiah, Eric Okyere, Albert L. Sackitey, Emmanuel K. Essel, **Stephen E. Moore** (2023). Stability Analysis of Caputo Fractional Order Viral Dynamics of Hepatitis B Cellular Infection. *Mathematical and Computational Applications*. https://doi.org/10.3390/mca28010024

29. **Stephen E. Moore**, Hetsron L. Nyandjo-Bamen, Olivier Menoukeu-Pamen, Joshua Kiddy K. Asamoah, Zhen Jin (2022). Global stability dynamics and sensitivity assessment of COVID-19 with timely-delayed diagnosis in Ghana. *Computational and Mathematical Biophysics*. https://doi.org/10.1515/cmb-2022-0134

30. Joshua Kiddy K. Asamoah, Eric Okyere, Afeez Abidemi, **Stephen E. Moore**, Gui-Quan Sun, Zhen Jin, Edward Acheampong, Joseph Frank Gordon (2022). Optimal control and comprehensive cost-effectiveness analysis for COVID-19. *Results in Physics*. https://doi.org/10.1016/j.rinp.2022.105177

31. Saheed O. Akindeinde, Eric Okyere, Adebayo O. Adewumi, Ramoshweu S. Lebelo, Olanrewaju O. Fabelurin, **Stephen E. Moore** (2021). Caputo fractional-order SEIRP model for COVID-19 Pandemic. *Alexandria Engineering Journal*. https://doi.org/10.1016/j.aej.2021.04.097

32. Joshua Kiddy K. Asamoah, Zhen Jin, Gui-Quan Sun, Baba Seidu, Ernest Yankson, Afeez Abidemi, F.T. Oduro, **Stephen E. Moore**, Eric Okyere (2021). Sensitivity assessment and optimal economic evaluation of a new COVID-19 compartmental epidemic model with control interventions. *Chaos Solitons & Fractals*. https://doi.org/10.1016/j.chaos.2021.110885

33. **Stephen Edward Moore** (2020). Discontinuous Galerkin isogeometric analysis for elliptic problems with discontinuous diffusion coefficients on surfaces. *Numerical Algorithms*. https://doi.org/10.1007/s11075-019-00856-x

34. **Stephen Edward Moore** (2019). Space-time multipatch discontinuous Galerkin isogeometric analysis for parabolic evolution problems. *SIAM Journal on Numerical Analysis*. https://doi.org/10.1137/17m1140285

35. **Stephen Edward Moore** (2018). A stable space–time finite element method for parabolic evolution problems: SE Moore. *Calcolo*. https://doi.org/10.1007/s10092-018-0261-8

36. **Stephen Edward Moore** (2018). Discontinuous Galerkin isogeometric analysis for the biharmonic equation. *Computers & Mathematics with Applications*. https://www.sciencedirect.com/science/article/pii/S089812211830261X

37. Ekeoma R. Ijioma, **Stephen E. Moore** (2018). Multiscale Galerkin approximation scheme for a system of quasilinear parabolic equations. *Journal of Mathematical Analysis and Applications*. https://doi.org/10.1016/j.jmaa.2018.08.054

38. **Stephen E Moore** (2016). Discontinuous Galerkin isogeometric analysis of elliptic PDEs on surfaces. *Domain decomposition methods in science and engineering XXII*. https://doi.org/10.1007/978-3-319-18827-0

39. **Stephen E Moore** (2016). Space-time isogeometric analysis of parabolic initial boundary value problems. *12th Austrian Numerical Analysis Day*. https://scholar.google.com/scholar?cluster=7853177991947977205&hl=en&oi=scholarr

40. **Stephen E Moore** (2016). Space–time isogeometric analysis of parabolic evolution problems. *Computer methods in applied mechanics and engineering*. https://www.sciencedirect.com/science/article/pii/S0045782516301293

41. **Stephen E Moore** (2015). Mesh grading in isogeometric analysis. *Computers & Mathematics with Applications*. https://www.sciencedirect.com/science/article/pii/S0898122115001066

42. **Stephen E Moore** (2014). Geometry Simulation Modules: Implementing Isogeometric Analysis. *PAMM: Proceedings in Applied Mathematics & Mechanics*. https://openurl.ebsco.com/contentitem/gcd:100084102?sid=ebsco:plink:crawler-gcd&id=ebsco:gcd:100084102&crl=c&jrnl=16177061

Book chapters 3

1. Brigid K. Gesami, Jacob Nunoo, **Stephen Edward Moore**, Joshua Sebu (2026). Examining the Preparedness of Kenya's Marine Fisheries and Maritime Transport Sectors for the Adoption of Artificial Intelligence. *Palgrave Studies in Maritime Economics*. https://doi.org/10.1007/978-3-032-25364-4_9

2. Brigid K. Gesami, Jacob Nunoo, **Stephen Moore**, Joshua Sebu (2026). Just War Theory and Non-State Actors: Ethical Dilemmas in Countering Al-Shabaab and Maritime Piracy in Kenya. *IntechOpen eBooks*. https://doi.org/10.5772/intechopen.1011109

3. **Stephen E Moore** (2015). Multipatch discontinuous Galerkin isogeometric analysis. *Isogeometric Analysis and Applications 2014*. https://doi.org/10.1007/978-3-319-23315-4_1

Conference papers 2

1. Charles Nimo, Tobi Olatunji, Abraham Toluwase Owodunni, Tassallah Abdullahi, Emmanuel Ayodele, Mardhiyah Sanni, Ezinwanne C. Aka, Folafunmi Omofoye, Foutse Yuehgoh, Timothy Faniran, … **Stephen Edward Moore** and 15 others (2025). AfriMed-QA: A Pan-African, Multi-Specialty, Medical Question-Answering Benchmark Dataset. *Proceedings of the 63rd Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers)*. https://doi.org/10.18653/v1/2025.acl-long.96

2. Jiayi Wang, David Adelani, Sweta Agrawal, Marek Masiak, Ricardo Rei, Eleftheria Briakou, Marine Carpuat, Xuanli He, Sofia Bourhim, Andiswa Bukula, … **Stephen Moore** and 47 others (2024). AfriMTE and AfriCOMET: Enhancing COMET to Embrace Under-resourced African Languages. *Proceedings of the 2024 Conference of the North American Chapter of the Association for Computational Linguistics: Human Language Technologies (Volume 1: Long Papers)*. https://doi.org/10.18653/v1/2024.naacl-long.334

Theses 2

1. **SE Moore** (2017). Nonstandard discretization strategies in isogeometric analysis for partial differential equations. *PhD thesis, Johannes Kepler University*. https://scholar.google.com/scholar?cluster=6319745948696446743&hl=en&oi=scholarr

2. **Stephen Edward Moore** (2011). A discontinuous Galerkin method for solving total variation minimization problems. *Johannes Kepler University, Linz, Austria*. https://numa.jku.at/media/filer_public/a6/86/a6861b15-83c1-495a-a3b0-7bfcd2df94ab/master-moore.pdf