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RESEARCH

Areas: Modeling and Simulation · Numerical Analysis · Public Health, Environmental and Occupational Health · Computational Theory and Mathematics · Statistical and Nonlinear Physics · Mathematical Physics

RESEARCH SUMMARY

46	286	10	12	0.63	7%
Publications	Citations	h-index	i10-index	Field-weighted impact	World top 10%

Counted from the 46 publications listed below, 2004–2026. Field-weighted impact is the mean over the 46 works scored for it; 1.00 is the world average for works of the same field, type and year. 3 of the 46 papers scored for it are among the world's most cited tenth for their field, type and year.

PUBLICATIONS

Journal articles 46

1. Leticia Amanor, **Isaac Kwame Dontwi**, Kwaku Forkuoh Darkwah (2026). Mittag-Leffler Algorithm to Solve Linear Fractional Ordinary Differential Equations. *Journal of Applied Mathematics*. https://doi.org/10.1155/jama/7366832
2. Emmanuel Mensah, Benedict Barnes, **Isaac Kwame Dontwi**, Kwaku Forkuoh Darkwah (2026). The Two Modified G′G-Expansion Methods for Obtaining Solitons of the Korteweg-De Vries Equation. *Advances in Mathematical Physics*. https://doi.org/10.1155/admp/9869666
3. Henry Kwasi Asiedu, Benedict Barnes, **Isaac Kwame Dontwi**, Kwaku Forkuoh Darkwah (2025). Exact solution of system of nonlinear fractional partial differential equations by modified semi-separation of variables method. *Partial Differential Equations in Applied Mathematics*. https://doi.org/10.1016/j.padiff.2025.101247
4. Isaac Addai, Benedict Barnes, **Isaac Kwame Dontwi**, Kwaku Forkuoh Darkwah (2025). Fractional Gauss Hypergeometric Power Series Method for Solving Fractional Partial Differential Equations. *Abstract and Applied Analysis*. https://doi.org/10.1155/aaa/7650251
5. Henry Kwasi Asiedu, Benedict Barnes, **Isaac Kwame Dontwi**, Kwaku Forkuoh Darkwah (2025). Modified Semiseparation of Variables Methods for Solving the System of Nonlinear Fractional Partial Differential Equations. *International Journal of Differential Equations*. https://doi.org/10.1155/ijde/3634269
6. Henry Kwasi Asiedu, Benedict Barnes, **Isaac Kwame Dontwi**, Kwaku Forkuoh Darkwah (2025). Solving system of nonlinear fractional partial differential equations by fractional semi-separation of variables method. *Research in Mathematics*. https://doi.org/10.1080/27684830.2025.2476871
7. Henry Kwasi Asiedu, Benedict Barnes, **Isaac Kwame Dontwi**, Kwaku Forkuoh Darkwah (2025). The Analytic Methods for Solving the System of Fractional Order Brusselator Equations. *International Journal of Differential Equations*. https://doi.org/10.1155/ijde/8436408
8. Francis Tuffour, Benedict Barnes, **Isaac Kwame Dontwi**, Kwaku Forkuoh Darkwah (2025). The Exact Solution of the Fractional Burger's Equation using the Modified Homogeneous Balance Method. *Scientific African*. https://doi.org/10.1016/j.sciaf.2025.e02789
9. Francis Tuffour, Benedict Barnes, **Isaac Kwame Dontwi**, Kwaku Forkuoh Darkwah (2025). The Modified

Homogeneous Balance Method for solving fractional Cahn–Allen and equal width equations. *Partial Differential Equations in Applied Mathematics*. https://doi.org/10.1016/j.padiff.2025.101246

10. Mary Osei Fokuo, William Obeng-Denteh, **Isaac Kwame Dontwi**, Patrick Akwasi Anamuah Mensah (2024). Determination of the Fixed Point of Lotka-Volterra Function. *European Journal of Pure and Applied Mathematics*. https://doi.org/10.29020/nybg.ejpam.v17i2.5155
11. M. Osei Fokuo, W. Obeng – Denteh, **I.K Dontwi**, P.A.A. Mensah (2024). Fixed point of discrete dynamical system of Lotka Volterra model. *Scientia Africana*. https://doi.org/10.4314/sa.v23i3.45
12. I. Issaka, B.O. Bainson, W. Obeng-Denteh, **I.K. Dontwi** (2024). On the fixed points theory of strong partial b- metric spaces. *Science World Journal*. https://doi.org/10.4314/swj.v19i3.31
13. Francis Tuffour, Benedict Barnes, **Isaac Kwame Dontwi**, Kwaku Forkuoh Darkwah (2024). The Modified Homogeneous Balance Methods for solving Korteweg–DeVries equations. *Partial Differential Equations in Applied Mathematics*. https://doi.org/10.1016/j.padiff.2024.101035
14. Richard Owusu, Adu Sakyi, Peter Amoako-Yirenkyi, **Isaac Kwame Dontwi** (2022). A New Multicontinuum Model for Advection-Diffusion Process of Single-Phase Nonlinear Flow in a Multiscale Fractured Porous Media. *Journal of Applied Mathematics*. https://doi.org/10.1155/2022/5731988
15. Richard Owusu, Adu Sakyi, **Isaac Kwame Dontwi**, Peter Amoako-Yirenkyi (2022). A new macro-scale volume averaged transport model for diffusive dominated non-Darcian flow problem in multi-scaled naturally fractured reservoirs. *Journal of Petroleum Exploration and Production Technology*. https://doi.org/10.1007/s13202-022-01498-x
16. Nana Kena Frempong, Richard Kodzo Avuglah, **Isaac Kwame Dontwi**, Francis Kwame Bukari (2021). Improved estimators for the rate parameter of gamma model using asymptotic properties. *Heliyon*. https://doi.org/10.1016/j.heliyon.2021.e06941
17. Adu Sakyi, Peter Amoako-Yirenkyi, **Isaac Kwame Dontwi** (2020). A Formal Homogenization Approach to Piping Flow Erosion with Deposition in a Spatially Heterogeneous Soil. *Journal of Advances in Mathematics and Computer Science*. https://doi.org/10.9734/jamcs/2020/v35i330257
18. Adu Sakyi, Peter Amoako-Yirenkyi, **Isaac Kwame Dontwi** (2020). A Rigorous Homogenization for a Two-Scale Convergence Approach to Piping Flow Erosion with Deposition in a Spatially Heterogeneous Soil. *Journal of Advances in Mathematics and Computer Science*. https://doi.org/10.9734/jamcs/2020/v35i330256
19. Gaston Edem Awashie, Peter Amoako-Yirenkyi, **Isaac Kwame Dontwi** (2019). Chebyshev wavelets collocation method for simulating a two-phase flow of immiscible fluids in a reservoir with different capillary effects. *Journal of Petroleum Exploration and Production Technology*. https://doi.org/10.1007/s13202-018-0601-x
20. Gbeve, Henry Kofi, Sakyi, Frederick Kwame, **Dontwi, Isaac Kwame**, Addison, Eric Koteic (2019). OCCUPATIONAL EXPOSURE TO IONISING RADIATION IN MEDICAL FACILITIES AND POSSIBLE HEALTH IMPLICATIONS: A CASE STUDY IN RADIOLOGICAL OR X-RAY DEPARTMENTS IN SOME SELECTED HEALTH FACILITIES IN GHANA. *HAL (Le Centre pour la Communication Scientifique Directe)*.
21. John Amoah-Mensah, **Isaac K. Dontwi**, Ebenezer Bonyah (2019). Stability Analysis of Multi-Infections (Malaria, Zika-Virus and Elephantiasis) Model. *Journal of Advances in Mathematics and Computer Science*. https://doi.org/10.9734/jamcs/2019/46180
22. Benedict Barnes, C. Sebil, **I. K. Dontwi** (2019). The Quotient Inequalities. *European Journal of Pure and Applied Mathematics*. https://doi.org/10.29020/nybg.ejpam.v12i2.3384
23. Peter Nyarko, **Isaac Dontwi**, Nana Frempong (2018). A Mathematical Model for Mycolactone Toxin Reaction and Di usion in Cell Cytoplasm. *Journal of Advances in Mathematics and Computer Science*. https://doi.org/10.9734/jamcs/2018/41382
24. S. Effah-Poku, W. Obeng-Denteh, **I. K. Dontwi** (2018). A Study of Chaos in Dynamical Systems. *Journal of Mathematics*. https://doi.org/10.1155/2018/1808953
25. John Amoah-Mensah, **I Dontwi**, E Bonyah (2018). Stability Analysis of Zika – Malaria Co-infection Model for Malaria Endemic Region. *Journal of Advances in Mathematics and Computer Science*. https://doi.org/

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26. Sampson Takyi Appiah, **Isaac Kwame Dontwi**, Newton Amegbey (2017). Comparing Mathematical Models for the Rate of Clot Dissolution during Laminar and Turbulent Flows using Reynolds Numbers.
27. George Parker-Lamptey, Peter Amoako-Yirenkyi, **Isaac Kwame Dontwi** (2017). Fractional radial-cylindrical diffusivity model for levels of heterogeneity in petroleum reservoirs. *Journal of Petroleum Exploration and Production Technology*. https://doi.org/10.1007/s13202-017-0349-8
28. Peter Amoako-Yirenkyi, Justice Kwame Appati, **Isaac Kwame Dontwi** (2016). A new construction of a fractional derivative mask for image edge analysis based on Riemann-Liouville fractional derivative. *Advances in Difference Equations*. https://doi.org/10.1186/s13662-016-0946-8
29. Christopher Godwin Udomboso, Godwin Nwazu Amahia, **Isaac Kwame Dontwi** (2016). An Adjusted Network Information Criterion for Model Selection in Statistical Neural Network Models. *Journal of Modern Applied Statistical Methods*. https://doi.org/10.22237/jmasm/1478003040
30. Eric Okyere, Francis Oduro, Samuel Amponsah, **Isaac Dontwi**, Nana Frempong (2016). Fractional Order SIR Model with Constant Population. *British Journal of Mathematics & Computer Science*. https://doi.org/10.9734/bjmcs/2016/23017
31. Peter Amoako-Yirenkyi, Gaston Edem Awashie, **Isaac Kwame Dontwi** (2016). On the Analysis and Numerical Formulation of Miscible Fluid Flow in Porous Media Using Chebyshev Wavelets Collocation Method. *Journal of Applied Mathematics and Physics*. https://doi.org/10.4236/jamp.2016.47126
32. Peter Amoako-Yirenkyi, Justice Kwame Appati, **Isaac Kwame Dontwi** (2016). Performance Analysis of Image Smoothing Techniques on a New Fractional Convolution Mask for Image Edge Detection. *Open Journal of Applied Sciences*. https://doi.org/10.4236/ojapps.2016.67048
33. **I. Dontwi**, W. Obeng-Denteh, E. Andam (2014). A Mathematical Model to Predict the Prevalence and Transmission Dynamics of Tuberculosis in Amansie West District, Ghana. *British Journal of Mathematics & Computer Science*. https://doi.org/10.9734/bjmcs/2014/4681
34. Ebenezer Bonyah, **Isaac Dontwi**, Farai Nyabadza (2014). A Theoretical Model for the Transmission Dynamics of the Buruli Ulcer with Saturated Treatment. *Computational and Mathematical Methods in Medicine*. https://doi.org/10.1155/2014/576039
35. **I. Dontwi** (2014). Modelling Hepatitis B in A High Prevalence District in Ghana. *British Journal of Mathematics & Computer Science*. https://doi.org/10.9734/bjmcs/2014/4682
36. Christopher Godwin Udomboso, Godwin Nwazu Amahia, **Isaac Kwame Dontwi** (2014). On the Level of Precision of the Wavelet Neural Network in Rainfall Analysis.
37. P. Amoako-Yirenkyi, N. Frempong, J. Appati, J. Hafron-Acquah, **I. Dontwi** (2014). Threshold Analysis of Wavelet Based Fingerprint Feature Extraction Methods on Multiple Impression Dataset. *British Journal of Mathematics & Computer Science*. https://doi.org/10.9734/bjmcs/2015/13000
38. **I. K. Dontwi**, V. K. Dedu, N. K. Aboagye (2013). Ascertaining the Financial Cost of Malaria and Mitigating against It Using Actuarial Models for Financial Cost. *International Journal of Financial Research*. https://doi.org/10.5430/ijfr.v4n3p94
39. **Isaac Kwame Dontwi**, William Obeng–Denteh, Francis Bilson Darku (2013). Modeling Memorization and Forgetfulness Using Dierential Equations. *Progress in applied mathematics*. https://doi.org/10.3968/j.pam.1925252820130601.3421
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41. **Isaac Kwame Dontwi**, William Obeng-Denteh (2012). Dynamic Systems of Shifts in the Space of Piece-Wise Continuous Functions. *Advances in Pure Mathematics*. https://doi.org/10.4236/apm.2012.26067
42. E. N. Wiah, **I. K. Dontwi**, I. A. Adetunde (2011). Using Mathematical Model to Depict the Immune Response to Hepatitis B Virus Infection. *Journal of Mathematics Research*. https://doi.org/10.5539/jmr.v3n2p157

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46. N.N.N Nsowah-Nuamah, M.E Aryeetey, E.T Jolayemi, Y Wagatsuma, G Mensah, **I.K Dontwi**, F.K Nkrumah, S Kojima (2004). Predicting the timing of second praziquantel treatment and its effect on reduction of egg counts in southern Ghana. *Acta Tropica*. https://doi.org/10.1016/j.actatropica.2002.03.001