William Obeng-Denteh

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PROFILE

William Obeng-Denteh works at the Department of Mathematics, Kwame Nkrumah University of Science and Technology. His research interests are in Homotopy Method, Homological invariants, Extended Complex Plane.

RESEARCH

Interests	Topology · Algebraic Topology · Topological Dynamics · Mathematics Education · Ordinary Differential Equations
Areas	Modeling and Simulation · Education · Mathematical Physics · Applied Mathematics · Geometry and Topology · Numerical Analysis

RESEARCH SUMMARY

157	534	11	13	0.56	10%
Publications	Citations	h-index	i10-index	Field-weighted impact	World top 10%

Counted from the 157 publications listed below, 2011–2026. Field-weighted impact is the mean over the 70 works scored for it; 1.00 is the world average for works of the same field, type and year. 7 of the 70 papers scored for it are among the world's most cited tenth for their field, type and year.

POSITIONS

Professor 2022–present
Mathematics, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana

Faculty Member 2007–present
Mathematics, Kwame Nkrumah University of Science and Technology College of Science, Kumasi, Ghana

PUBLICATIONS

Journal articles 147

1. Celestine Agbata Benedict, Fabiana Çullhaj, Emmanuel Abah, Raimonda Dervishi, **William Obeng-Denteh**, Homan Emadifar, Aseel Smerat, Mbah Godwin Christopher Ezike (2026). Analysis of Fractal-Fractional - Order Model of Tuberculosis with Vaccination and Treatment Interventions. *Interdisciplinary Journal of Research and Development*. https://doi.org/10.56345/ijrdv13n237
2. Duván Cardona, **William Obeng-Denteh**, Frederick Opoku (2026). Hyperbolic partial differential equations with complex characteristics on Fourier Lebesgue spaces. *Rendiconti del Circolo Matematico di Palermo Series 2*. https://doi.org/10.1007/s12215-026-01497-5
3. **William Obeng-Denteh**, AM Fred (2026). Impact of self-medication and hospitalization on pneumonia transmission: a mathematical modeling approach. *JOURNAL OF BASICS AND APPLIED SCIENCES RESEARCH*. https://jobasrfudutsinma.com/index.php/ojs-files/article/view/401
4. Farouq Sessah Mensah, Philip Adjei Acheampong, Francis Kwadwo Awuah, **William Obeng-Denteh**,

Augustina Adu, Leticia Nana Sam (2026). Making workplace mathematics visible: an analytical framework of vocational mathematical affordances in welding and fabrication in Ghana. *Frontiers in Education*. https://doi.org/10.3389/feduc.2026.1916537

5. **OD William** (2026). Mathematical Modelling of Engineering Problems. *Journal homepage: http://iieta. org/journals/mmep*. https://www.researchgate.net/profile/Agbata-Celestine/publication/401939946_Measuring_Albania's_Hydropower-Dominated_Electricity_System_2000-2024_An_Electricity-Balance_Performance_Index_with_Bootstrap_Inference_and_Weighting_Sensitivity/links/69b4038e8c53216c011b28df/Measuring-Albanias-Hydropower-Dominated-Electricity-System-2000-2024-An-Electricity-Balance-Performance-Index-with-Bootstrap-Inference-and-Weighting-Sensitivity.pdf
6. Francis Ayiah-Mensah, Senyefia Bosson-Amedenu, **William Obeng-Denteh**, Rebecca N. Arhin, Christiana N. M. Lokko (2026). Modelling Dynamic PSA Trajectories and Survival in Prostate Cancer Using Joint Longitudinal Survival Models. *Journal of Cancer and Tumor International*. https://doi.org/10.9734/jcti/2026/v16i1336
7. **William Obeng-Denteh**, B Benedict (2026). The modified homogeneous balance method for finding solitons of the fractional Kaup-Kupershmidt equation. *Physics Letters A*. https://www.sciencedirect.com/science/article/pii/S0375960126002793
8. Jacob Issaka, Amos Sosoo, Charles Bukure, Bawa Hawa, Agnes Oppong Seppeh, Bright Kwaku Anokye, Opoku Frederick, Michael Tweneboah Darkwah, **William Obeng-Denteh** (2025). A Journey through Moduli Space. *East African Journal of Interdisciplinary Studies*. https://doi.org/10.37284/eajis.8.2.3683
9. Amos Sosoo, Jacob Issaka, Charles Bukure, Bawa Hawa, Agnes Oppong Seppeh, Barima Akwasi Ahenkora, Bright Kwaku Anokye, Opoku Frederick, Michael Tweneboah Darkwah, **William Obeng-Denteh** (2025). A Review of the Tietze Extension Theorem. *East African Journal of Interdisciplinary Studies*. https://doi.org/10.37284/eajis.8.2.3664
10. Emmanuel Appoh Andam, Francis Kwadwo Awuah, **William Obeng-Denteh** (2025). A Systematic Review and Bibliometric Analysis of Probability Concepts: Research Methods and Frameworks. *East African Journal of Interdisciplinary Studies*. https://doi.org/10.37284/eajis.8.1.2989
11. **William Obeng-Denteh** (2025). A mathematical model for the control of Ebola virus disease with vaccination effect. *Journal of Mathematical Epidemiology*. https://mathepidemi.com/index.php/pub/article/view/6
12. **William Obeng-Denteh** (2025). A new epidemiological model for the transmission dynamics of Tuberculosis incorporating vaccination and impact of environmental intervention. *International Journal of Mathematical Analysis and Modelling*. https://scholar.google.com/scholar?cluster=11580751362655469270&hl=en&oi=scholarr
13. **William Obeng-Denteh**, F Asante-Mensa, PA Kwabi (2025). ANALYSIS OF FRACTIONAL-ORDER MATHEMATICAL MODEL FOR THE TRANSMISSION DYNAMICS OF MALARIA WITH CONTROL STRATEGIES. *Journal of Pharmaceutical & Allied Sciences*. https://openurl.ebsco.com/contentitem/gcd:186141242?sid=ebsco:plink:crawler-gcd&id=ebsco:gcd:186141242&crl=c&jrnl=15968499
14. Emmanuel Appoh Andam, Francis Kwadwo Awuah, **William Obeng-Denteh** (2025). Analysis of Grade 11 Students' Conceptual Understanding in Probability Concepts: A Perspective of Skemp Understanding Theory. *East African Journal of Education Studies*. https://doi.org/10.37284/eajes.8.2.2987
15. Abah E., Agbata, B.C., Asante-Mensa F., Raimonda Dervishi, Kwabi, P.A, Amoah-Mensah J., Meseda P.K., **Obeng-Denteh W.** (2025). Analysis of a fractional-order mathematical model for tuberculosis using the Atangana-Baleunu-Caputo operator. *Dutse Journal of Pure and Applied Sciences*. https://doi.org/10.4314/dujopas.v11i3a.16
16. **William Obeng-Denteh**, F Asante-Mensa, PA Kwabi (2025). Analysis of fractional-order mathematical model on the transmission dynamics of diarrhea with treatment intervention. *Dutse Journal of Pure and Applied Sciences*. https://www.ajol.info/index.php/dujopas/article/view/303158
17. Richard Kwame Ansah, Richard Kena Boadi, **William Obeng-Denteh**, Killian Asampana Asosega, Kassim

Tawiah (2025). Exploring cooking fuel choices among Ghanaian women of reproductive age: A socio-economic analysis from a statistical mechanics perspective. *PLoS ONE*. https://doi.org/10.1371/journal.pone.0317004

18. Augustina Adu, Jones Apawu, **William Obeng-Denteh** (2025). MANIPULATIVES USE IN MATHEMATICS CLASSROOMS OF INCLUSIVE BASIC SCHOOLS IN GHANA. *Physical and Mathematical Education*. https://doi.org/10.31110/fmo2025.v40i5-01
19. **William Obeng-Denteh**, PA Kwabi (2025). MATHEMATICAL MODELLING AND ANALYSIS OF MALARIA MODEL WITH EFFECTS OF VACCINATION AND TREATMENT INTERVENTION. *Journal of Pharmaceutical & Allied Sciences*. https://openurl.ebsco.com/contentitem/gcd:186152271?sid=ebsco:plink:crawler-gcd&id=ebsco:gcd:186152271&crl=c&jrnl=15968499
20. Renfei Luo, Agbata Benedict Celestine, Mehmet Gümüş, **Obeng-Denteh William**, Homan Emadifar, Aseel Smerat, A.K. Awasthi (2025). Mathematical modeling and analysis of a sex-structured syphilis model with control measures. *BMC Public Health*. https://doi.org/10.1186/s12889-025-25823-1
21. **William Obeng-Denteh**, F Asante-Mensa, PA Kwabi (2025). Mathematical modelling of measles disease with double dose vaccination. *Journal of Basics and Applied Sciences Research*. https://www.ajol.info/index.php/jobasr/article/view/297701
22. **William Obeng-Denteh** (2025). NORMALITY AND REGULARITY OF PYTHAGOREAN FUZZY CELLULAR SPACES. *TWMS Journal of Applied and Engineering Mathematics*. https://dergipark.org.tr/en/pub/twmsjaem/article/1795203
23. Fred Asante-Mensa, Samuel Kwesi Asiedu- Addo, Samuel Owusu Ansah, Isaac Ansah, Benedict Celestine Agbata, **William Obeng-Denteh** (2025). Perceptions of Inquiry-Based Mathematics Instruction in Technical and Vocational Schools in Ghana. *Journal of Mathematics Education*. https://doi.org/10.26711/007577152790193
24. Emmanuel Appoh Andam, Francis Kwadwo Awuah, **William Obeng-Denteh** (2025). Probability Concepts: A Systematic Literature Review of Students' Learning Difficulties, Errors and Misconceptions. *East African Journal of Arts and Social Sciences*. https://doi.org/10.37284/eajass.8.2.3008
25. **William Obeng-Denteh**, F Asante-Mensa, PA Kwabi (2025). Semi-analytical approach to a fractional-order model for the dynamics and control of typhoid fever. *J Basic Appl Sci Res*. https://jobasrfudutsinma.com/index.php/ojs-files/article/view/223
26. Kwasi Frempong Sarfo, **William Obeng-Denteh**, Ishmael Takyi, Kwaku Forkuoh Darkwah (2024). A Force Function Formula for Solutions of Nonlinear Weakly Singular Volterra Integral Equations. *European Journal of Pure and Applied Mathematics*. https://doi.org/10.29020/nybg.ejpam.v17i2.5071
27. Fred Asante-Mensa, **W Obeng-Denteh** (2024). A MATHEMATICAL MODEL FOR THE CONTROL OF CHOLERA OUTBREAK IN NIGERIA. *Journal of Pharmaceutical & Allied Sciences*. https://openurl.ebsco.com/contentitem/gcd:182496322?sid=ebsco:plink:crawler-gcd&id=ebsco:gcd:182496322&crl=c&jrnl=15968499
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29. **W Obeng-Denteh**, F Asante-Mensa, PA Kwabi (2024). Advancing mathematics education in Africa: Challenges, strategies, and prospects. *Science World Journal*. https://www.ajol.info/index.php/swj/article/view/280927
30. 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
31. **W Obeng-Denteh**, F Asante-Mensa, PA Kwabi (2024). Digital preservation and promotion of indigenous mathematics: a global initiative. *Dutse Journal of Pure and Applied Sciences*. https://www.ajol.info/

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32. Fred Asante-Mensa, Samuel Kwesi Asiedu-Addo, **William Obeng-Denteh**, Gloria Armah (2024). EFFECTIVENESS OF THE INQUIRY-BASED TEACHING APPROACH ON TECHNICAL AND VOCATIONAL STUDENTS' MATHEMATICS ACHIEVEMENT IN GHANA. *International Multidisciplinary Journal of Research and Education (IMJRE)*. https://doi.org/10.64712/imjre.v2i1.293
33. Fred Asante-Mensa, **W Obeng-Denteh**, PA Kwabi (2024). Everyday uses of mathematics and the roles of a mathematics teacher. *Science World Journal*. https://www.ajol.info/index.php/swj/article/view/280931
34. Richard Kwame Ansah, Richard Kena Boadi, **William Obeng-Denteh**, Kassim Tawiah, Sampson Takyi Appiah (2024). Exploring mean field spin models with multiple populations: A theoretical framework. *AIP Advances*. https://doi.org/10.1063/5.0194693
35. 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
36. **W Obeng–Denteh** (2024). Fixed point theory with partially ordered metric spaces and homotopy. *Scientia Africana*. https://www.ajol.info/index.php/sa/article/view/284199
37. Patrick Yankyera, Gabriel Kusi, **William Obeng-Denteh** (2024). Grammatical Insights and Spiritual Significance: A Morpho-Syntactic Analysis of Matthew 8:1-4 and Its Implications on Testimony Practices in Ghanaian Pentecostal and Charismatic Congregations. *E-Journal of Humanities Arts and Social Sciences*. https://doi.org/10.38159/ehass.20245718
38. **W. Obeng-Denteh**, R. Owusu, G.K. Ravathi, G. Hannah Grace, J. Amoah-Mensah (2024). Investigating the role of chaos theory in understanding and mitigating the impacts of climate change. *Scientia Africana*. https://doi.org/10.4314/sa.v23i4.7
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41. B.C. Agbata, **W Obeng-Denteh**, M.M Shior, F Asante- Mensa, P.A. Kwabi, A. Aal-Rkhais Habeeb, I.G Ezugorie, D.F Agbebagu (2024). Numerical solution of fractional order mathematical model on the transmission dynamics of Ebola Virus Disease using the Laplace-Adomian Decomposition method. *Scientia Africana*. https://doi.org/10.4314/sa.v23i4.20
42. Fred Asante-Mensa, **W Obeng-Denteh**, PA Kwabi (2024). Numerical solution of fractional order model of measles disease with double dose vaccination. *Dutse Journal of Pure and Applied Sciences*. https://www.ajol.info/index.php/dujopas/article/view/281624
43. M.M. Shior, B.C. Agbata, **W Obeng-Denteh**, P.A. Kwabi, I.G. Ezugorie, S. Marcos, F Asante-Mensa, E. Abah (2024). Numerical solution of partial differential equations using MATLAB: Applications to one-dimensional heat and wave equations. *Scientia Africana*. https://doi.org/10.4314/sa.v23i4.21
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45. Patrick Yankyera, John Kwabena Boachie, **William Obeng-Denteh**, Peter Adams (2024). The Divinity of Christ in a Pluralistic World – A Study of Johannine Christology. *E-Journal of Religious and Theological Studies*. https://doi.org/10.38159/erats.202410132
46. F Asante-Mensa, **W Obeng-Denteh**, Gloria Armah (2024). The effectiveness of the inquiry-based teaching approach on technical and vocational students' mathematics achievement in Ghana. *International Multidisciplinary Journal ofResearch and Education*. https://journals.uew.edu.gh/index.php/imjre/article/view/293
47. Fred Asante-Mensa, **W Obeng-Denteh** (2023). A mathematical model of COVID-19 transmission dynamics with effects of awareness and vaccination program. *Journal of Ghana Science Association*. https://scholar.google.com/scholar?cluster=17235354751158163347&hl=en&oi=scholarr

48. Richard Kwame Ansah, Richard Kena Boadi, **William Obeng-Denteh**, Kassim Tawiah (2023). Inverse problem for the quartic mean-field Ising model. *The European Physical Journal Plus*. https://doi.org/10.1140/epjp/s13360-023-04251-3

49. Henry Otoo, **William Obeng-Denteh**, Lewis Brew (2023). Oscillatory Solution of a Convolutional Volterra Integral Equation. *Asian Research Journal of Mathematics*. https://doi.org/10.9734/arjom/2023/v19i12772

50. Mari Mohammed,, **William Obeng-Denteh**,, Fred Asante-Mensa (2022). A comprehensive approach to geometric simplexes. *Global Journal of Pure and Applied Sciences*. https://doi.org/10.4314/gjpas.v28i1.14

51. **W Obeng-Denteh** (2022). An investigation into homotopy of continuous functions. *Science World Journal*. https://www.ajol.info/index.php/swj/article/view/231341

52. **William Obeng-Denteh**, Nicholas Tetteh Ofoe (2022). Aninvestigation Of Winding Number Of A Closed Planar Curve. *Global Journal of Pure and Applied Sciences*. https://doi.org/10.4314/gjpas.v28i2.6

53. **William Obeng-Denteh**, David Adjei (2022). Comparative analysis between homotopy group and homology group. *Global Journal of Pure and Applied Sciences*. https://doi.org/10.4314/gjpas.v28i1.13

54. Patrick Akwasi Anamuah Mensah, **William Obeng-Denteh**, Kwasi Baah Gyamfi (2022). Periodic Point as a Recurrent Formation Using the Logistic Function: A Survey. *Momona Ethiopian Journal of Science*. https://doi.org/10.4314/mejs.v14i2.5

55. **W Obeng-Denteh**, F Asante-Mensa (2022). Topological spaces with an emphasis on the sphere and its applications. *Science World Journal*. https://www.ajol.info/index.php/swj/article/view/226554

56. Patrick Akwasi Anamuah Mensah, **William Obeng-Denteh**, Ibrahim Issaka, Kwasi Baah Gyamfi, Joshua Kiddy K. Asamoah (2022). Using the Logistic Map as Compared to the Cubic Map to Show the Convergence and the Relaxation of the Period–1 Fixed Point. *International Journal of Mathematics and Mathematical Sciences*. Retracted. https://doi.org/10.1155/2022/1255614

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60. Zigli David Delali, **Obeng-Denteh William**, Brew Lewis, Ansah Richard Kwame (2021). The Homotopical Proof of Π1 (S, xo) as a Fundamental Group in a General Interval. *Advances in Pure Mathematics*. https://doi.org/10.4236/apm.2021.115024

61. **W Obeng-Denteh** (2021). The fixed point as a period-1 recurrent in topological dynamical systems. *Science World Journal*. https://www.academia.edu/download/82507720/222466_Article_Text_544241_1_10_20220306.pdf

62. David Adjei, **William Obeng–Denteh** (2020). A MATHEMATICIAN'S JOURNEY THROUGH TIME: FROM GALILEO TO EINSTEIN.

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68. **W OBENG-DENTEH** (2019). ALGEBRAIC CONSTRUCTION OF THE CANTOR SET. *International Journal of Mathematical Archive EISSN 2229-5046*.
69. Lewis Brew, **William Obeng-Denteh**, David Delali Zigli (2019). Application of Homotopy to the Ageing Process of Human Body Within the Framework of Algebraic Topology. *Journal of Mathematics Research*. https://doi.org/10.5539/jmr.v11n4p21
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71. Frank Kwarteng Nkrumah, Samuel Amoh Gyampoh, **William Obeng-Denteh** (2019). The Universal Coefficient Theorem for Homology and Cohomology an Enigma of Computations. *Archives of Current Research International*. https://doi.org/10.9734/acri/2019/v17i430116
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