

Prof. Emmanuel K Essel

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RESEARCH

Interests Homogenization of PDEs

Areas Computational Mechanics · Applied Mathematics · Computational Theory and Mathematics · Mechanics of Materials · Public Health, Environmental and Occupational Health · Modeling and Simulation

RESEARCH SUMMARY

24	187	7	5	0.83	13%
Publications	Citations	h-index	i10-index	Field-weighted impact	World top 10%

Counted from the 24 publications listed below, 2006–2025. Field-weighted impact is the mean over the 15 works scored for it; 1.00 is the world average for works of the same field, type and year. 2 of the 15 papers scored for it are among the world's most cited tenth for their field, type and year.

PUBLICATIONS

Journal articles 18

1. Olalekan Afolabi, Zainab Akinsemoyin, Emmanuel Essel, Michael Oghale Ighofiomoni, Kayode Emmanuel Thompson, Kabir Abiodun Basit, Confidence Adimchi Chinonyerem (2025). Integrating Machine Learning and Subsurface Characterization for Improved Urban Flood Modelling and Parameter Optimization. *Asian Journal of Advanced Research and Reports*. <https://doi.org/10.9734/ajarr/2025/v19i71083>
2. 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>
3. Martin Anokye, Henry Amankwah, Emmanuel Kwame Essel, Irene Kafui Amponsah (2019). Dynamics of Equilibrium Prices With Differential and Delay Differential Equations Using Characteristic Equation Techniques. *Journal of Mathematics Research*. <https://doi.org/10.5539/jmr.v11n4p1>
4. Irene K Amponash Martin Anokye, Emmanuel Kwame Essel, Irene Kafui Amponsah (2018). THE DIFFERENTIAL AND DELAY DIFFERENTIAL APPROACH IN THE ANALYSIS OF STABLE STATE EQUILIBRIUM PRICES USING CHARACTERISTIC EQUATION TECHNIQUES. *International Journal of Management and Applied Science*. <https://ir.ucc.edu.gh/items/04dab804-da65-4c21-ad09-d576af9eba39>
5. E.K. Essel, E. Yankson, S.M. Naandam, A.S. Lanor (2015). ASYMPTOTIC BEHAVIOUR OF THE WRONSKIAN OF BOUNDARY CONDITION FUNCTIONS FOR A FOURTH ORDER BOUNDARY VALUE ROBLEM (A SPECIAL CASE). *International Journal of Pure and Applied Mathematics*. <https://doi.org/10.12732/ijpam.v99i4.6>
6. Ernest Yankson, Emmanuel K. Essel (2015). Stability in delay Volterra difference equations of neutral type. *Proyecciones (Antofagasta)*. <https://doi.org/10.4067/s0716-09172015000300003>
7. Emmanuel K. Essel, Ernest Yankson (2014). On the existence of positive periodic solutions for totally nonlinear neutral differential equations of the second-order with functional delay. *Opuscula Mathematica*. <https://doi.org/10.7494/opmath.2014.34.3.469>
8. NAANDAM SAMUEL MINDAKIFOE, EK Essel (2013). Analysis of a malaria model with two infectious classes. *Journal of Applied Mathematics and Bioinformatics*. <http://www.scienpress.com/Upload/JAMB/>

9. EK Essel, Ernest Yankson (2013). Asymptotic behaviour of boundary condition functions for a fourth-order boundary value problem. *Theoretical Mathematics & Applications (TMA)*. http://www.scienpress.com/Upload/TMA/Vol%203_3_10.pdf
10. Emmanuel Kwame Essel (2013). Homogenization of Stokes Equation by Multiple Scale Expansion Method. *Studies in mathematical sciences*. <https://doi.org/10.3968/j.sms.1923845220130601.7625>
11. Bismark Akoto, Emmanuel Kwame Essel, Gunnar Söderbacka (2012). On Behaviour of a Host-vector Epidemic Model with Non-linear Incidence. *Studies in mathematical sciences*. <https://doi.org/10.3968/j.sms.1923845220120401.1369>
12. Andreas Almqvist, Emmanuel Kwame Essel, John Fabricius, Peter Wall (2011). Multiscale homogenization of a class of nonlinear equations with applications in lubrication theory and applications. *Journal of Function Spaces*. <https://doi.org/10.1155/2009/432170>
13. Emmanuel Kwame Essel, Komil Kuliev, Gulchehra Kulieva, Lars-Erik Persson (2010). Homogenization of quasilinear parabolic problems by the method of Rothe and two scale convergence. *Applications of Mathematics*. <https://doi.org/10.1007/s10492-010-0023-7>
14. James A. Oguntuase, Lars-Erik Persson, Emmanuel K. Essel (2008). Multidimensional Hardy-type inequalities with general kernels. *Journal of Mathematical Analysis and Applications*. <https://doi.org/10.1016/j.jmaa.2008.07.053>
15. J. A. Oguntuase, L.-E. Persson, E. K. Essel, B. A. Popoola (2008). Refined Multidimensional Hardy-type inequalities via superquadracity. *Banach Journal of Mathematical Analysis*. <https://doi.org/10.15352/bjma/1240336299>
16. Emmanuel Kwame Essel (2008). Reiterated homogenization applied in hydrodynamic lubrication. *Proceedings of the Institution of Mechanical Engineers, Part J: Journal of Engineering Tribology*. <https://doi.org/10.1243/13506501jet426>
17. Andreas Almqvist, Emmanuel Kwame Essel, John Fabricius, Peter Wall (2008). Variational bounds applied to unstationary hydrodynamic lubrication. *International Journal of Engineering Science*. <https://doi.org/10.1016/j.ijengsci.2008.03.001>
18. A. Almqvist, E.K. Essel, L.-E. Persson, Peter Wall (2007). Homogenization of the unstationary incompressible Reynolds equation. *Tribology International*. <https://doi.org/10.1016/j.triboint.2007.02.021>

Book chapters 1

1. Emmanuel K. Essel (2019). Francis K. A. Allotey (Saltpond, Ghana 9 August 1932 – Accra, Ghana 2 November 2017). *Springer proceedings in mathematics & statistics*. https://doi.org/10.1007/978-3-030-05657-5_1

Reports 3

1. Emmanuel Kwame Essel (2008). Reiterated homogenization of a nonlinear Reynolds-type equation. *Department of Mathematics*. <https://scholar.google.com/scholar?cluster=4912142572798046757&hl=en&oi=scholar>
2. Emmanuel Kwame Essel (2007). Homogenization of the stationary compressible Reynolds equation by two-scale convergence (constant bulk modulus case). *Department of Mathematics*.
3. Emmanuel Kwame Essel (2006). On linear parabolic problems with singular coefficients in non-cylindrical domains. *Department of Mathematics*. <https://scholar.google.com/scholar?cluster=15785815475478573242&hl=en&oi=scholar>

Theses 2

1. Emmanuel Kwame Essel (2008). Homogenization of Reynolds equations and of some parabolic problems via Rothe's method. *Luleå tekniska universitet*. <https://www.academia.edu/download/100866258/FULLTEXT01.pdf>
2. Emmanuel Kwame Essel (2007). Homogenization of Reynolds equations. *Luleå tekniska universitet*. <https://www.academia.edu/download/86622280/FULLTEXT01.pdf>