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 Apllied 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/

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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 S¨oderbacka (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=scholarr
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=scholarr

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