

UNIVERSITY OF IBADAN  
CURRICULUM VITAE

- I (a) Name: Oyebola Olubusoye Popoola
- (b) Department: Physics
- (c) Faculty: Science
- II (a) First Academic Appointment : Lecturer I (1 August, 2009)
- (b) Present Post (With date): Senior Lecturer (1 October, 2016)
- (c) Date of Last Promotion: Senior Lecturer (1 October, 2016)
- (d) Date Last Considered (in cases where promotion was not through): Not Applicable
- III University Education (with dates)
- (a) University of Ibadan, Ibadan 1985-1989
- (b) University of Ibadan, Ibadan 1991-1993
- (c) University of Ibadan, Ibadan 1993-2002
- IV Academic Qualifications (with dates and granting bodies)
- (a) B.Sc. (Hons), University of Ibadan 1989
- (b) M.Sc. Physics, University of Ibadan 1993
- (c) Ph.D. Physics, University of Ibadan 2002

- V      Professional Qualifications and Diplomas (with dates)
1. Computer training in Software and Hardware, 1993.
  2. Training and orientation For New UI Staff, University of Ibadan, 10<sup>th</sup>-13<sup>th</sup> April, 2012. (Certificate issued at the end of the training)
- VI      Scholarships, Fellowships and Prizes (with dates) in respect of Undergraduate and Postgraduate work only)      Nil
- VII      Honours, Distinctions and Membership of Learned Societies:
- (a) Member, Organisation for Women in Science for Developing World (OWSD)  
ID: 1007
  - (b) Member, Nigerian Association of Mathematical Physics
- VIII      Details of Teaching/Work Experience
- (a) Assistant Lecturer, University of Ibadan, 1995 to 1997  
Lecturer II, University of Ibadan, 1997 to 2007  
Research Fellow I, National Mathematical Centre, Kwali, Abuja, 2007  
Lecturer I, University of Abuja, Abuja, 200 to 2009  
Lecturer I, University of Ibadan, 2009 to date
  - (b) Courses Taught
    - (i) Undergraduate Courses  
PHY 118 Experimental Physics I  
PHY 298 Experimental Physics II  
PHY 299 Experimental Physics III  
PHY 398 Experimental Physics IV  
PHY 399 Experimental Physics V

PHY 406 Classical Mechanics - University of Ibadan

PHY 498 Experimental Physics VI

PHY 499 Undergraduate Project - University of Ibadan

PHY 202 Classical Physics I - University of Ibadan

PHY 304 Quantum Physics

PHY 407 Solid States Physics II

PHY 307 Solid State Physics I - University of Ibadan

PHY 310 Introduction to Nuclear Physics - University of Ibadan

PHY 103 Optics, Waves & Modern Physics - University of Abuja

PHY 307 Mathematical Methods in Physics - University of Abuja

PHY 411 Quantum Mechanics II - University of Abuja

PHY 409 Students' Project- University of Abuja

PHY 414 Nuclear Physics and Particle Physics - University of Abuja

(ii) Postgraduate Courses

PHY 701 Electromagnetic Theory- University of Ibadan

PHY 703 Quantum Theory- University of Ibadan

PHY 707 General Relativity- University of Ibadan

PHY 705 Analysis of data- University of Ibadan

PHY 715 Semiconductor Physics - University of Ibadan

PHY 782 Mathematical Methods- University of Ibadan

PHY 703 Advanced Quantum Mechanics - University of Abuja

PHY 704 Statistical Mechanics - University of Abuja

(c) Project Supervision

- (i) B.Sc. Project – > 60
- (ii) M.Sc. Project – > 50
- (iii) Ph.D. Thesis - 5

(d) Administrative Duties:

- (i) Head, Theoretical Physics Group, University of Ibadan.
- (ii) Supervisor, 400 Level Laboratory, University of Ibadan, 2013/14, 2014/15 Sessions.
- (iii) Coordinator, PHY 101 (Elementary Physics for Agric. and Vet Med.), University of Ibadan, 1997/98 Session.
- (iv) Coordinator, 200 level, University of Ibadan, 1998/99-2001/2002 session.
- (v) Coordinator, National Physics Olympiad, National Mathematical Centre, Abuja, 2006.
- (vi) Coordinator, Students' Projects, University of Abuja, 2007/2008 session.
- (vii) Coordinator, 100 level, University of Ibadan, 2020/2021 session.
- (viii) Coordinator, 200 level, University of Ibadan, 2021/2022 session.
- (ix) Coordinator, 300 level, University of Ibadan, 2022/2023 session.
- (x) Coordinator, 400 level, University of Ibadan, 2023/2024 session.

## IX Research

### (a) Completed :

1. Modelling Chaotic Hamiltonian Systems as a Markov Chain
2. Thermodynamical evaluation of viscosity in In-Zn and Sn-Zn liquid alloys
3. Localization of electrons in a One- Dimensional Disordered Crystal, Dimensional Disordered Crystal
4. Assessment of Exact Solutions of the Space and Time Fractional Benjamin-Bona-Mahony Equation via the  $G'/G'$  - expansion method, modified simple equation method, and Liu's Theorem
5. Exact Bound State Solution of q-deformed Woods-Saxon plus modified Coulomb Potentials Using Conventional Nikiforov-Uvarov Method
6. Hyperbolic Stabilization and Synchronisation in a Flux-Controlled Memristor System
7. Bound-State Solution of Schrodinger Equation With Hulthen Plus Generalised Exponential Coulomb Potential Using Nikiforov-Uvarov Method

### (b) In progress:

- (i) There is research interest in *numerical analysis of quantum chaotic billiards*. The dynamics of the system has been analysed qualitatively and quantitatively by calculating the lyapunov exponents and plotting the Poincare sections. A semiclassical method (Feynman path integral) is going to be applied to determine the eigenfunctions and eigenvalues of these systems. It is applicable in quantum chaos, especially to transport in quantum dot, a semiconductor device.
- (ii) Investigation of dynamics and analyses of vibrational resonance in chaotic systems.
- (iii) Statistical mechanics of chaotic Hamiltonian systems

### (c) Project, Dissertation and Thesis

1. Transmissivity in Random Potentials, University of Ibadan, M.Sc. Project, 1993.

2. Statistics on Poincaré Section of Three Particular Chaotic Hamiltonian Systems, University of Ibadan, Ph.D. Thesis, 2002.

X Publications

- (a) Books already published Nil
- (b) Chapters in Books already published Nil
- (c) Articles that have already appeared in Refereed Conference Proceedings
1. Fuwape, I. and **Popoola, O.** (2002). Nigerian Women in Physics. Proceedings of American Institute of Physics Vol. 628. Paris, France: American Institute of Physics. 201-202pp. (United States of America) (Contribution: 50%)
  2. Fuwape, I. and **Popoola, O.** (2005). Status of Women in Physics in Nigeria, proceedings of American Institute of Physics Vol. 795. Rio de Janeiro, Brazil: American Institute of Physics. 143-145pp. (United States of America)
  3. Fuwape, I., Okeke, F., Ajayi, M., Popoola, O., & Olayanju, O. (2009). Women in physics in Nigeria: 2003--2008. AIP Conference Proceedings, 1119, 147–148. American Institute of Physics.
  4. Kolebaje, O., & Popoola, O. (2019). Jacobi stability analysis of predator-prey models with holling-type II and III functional responses. AIP Conference Proceedings, 2184. AIP Publishing.
- (d) Patent Nil
- (e) Articles that have already appeared in learned journals Nil
5. **Popoola, O.** and Akin-Ojo R. (2004). Modelling Chaotic Hamiltonian Systems as a Markov Chain. *Journal of the Nigerian Association of Mathematical Physics* Vol. 8. No. 1: 199-202pp. (Nigeria)
  6. Ilo-Okeke, E.O., Anusionwu, B.C. and **Popoola, O.** (2005). Thermodynamical evaluation of viscosity in In-Zn and Sn-Zn liquid alloys. *Physics and Chemistry of liquids* Vol 43.No. 4: 333-342pp. (United States of America)
  7. Oyeniya, E. and **Popoola, O.** (2012). Localization of electrons in a One-Dimensional Disordered Crystal, Dimensional Disordered Crystal. *Journal of the Nigerian Association of Physics* Vol. 20: 273-284pp. (Nigeria)
  8. Okon, I. B., Ituen, E.E., **Popoola, O.** and Antia, A.D. (2013). Analytical Solution of Schrödinger Equation With Mie-Type Potential Using Factorisation Method. *International Journal of Recent Advances in Physics* Vol. 2. No.2: 1-7pp. (Australia)

9. Kolebaje, O. and **Popoola O.** (2013). New Travelling Wave Solution of the De-Vries equation by  $(G'/G')$  – expansion method and Liu’s Theorem. *Journal of the Nigerian Association of Mathematical* Vol. 24. 441-446pp. (Nigeria)
10. Kolebaje, O. and **Popoola, O.** (2014). Assessment of Exact Solutions of the Space and Time Fractional Benjamin-Bona-Mahony Equation via the  $G'/G'$  - expansion method, modified simple equation method, and Liu’s Theorem. *Hindawi Publishing Corporation Mathematical Physics* Vol.2014: 1-11pp. (Egypt)
11. Oyeniyi, E. and **Popoola, O.** (2014). The effect of Hydrostatic pressure, temperature and impurity on the binding energy of a Hydrogenic donor impurity in a quantum dot. *Journal of the Nigerian Association of Mathematical Physics*. Vol. 26:167-176pp. (Nigeria)
12. Okon, I.B., **Popoola, O.** and Isonguyo, C.N. (2014). Exact Bound State Solution of q-deformed Woods-Saxon plus modified Coulomb Potentials Using Conventional Nikiforov-Uvarov Method. *International Journal of Recent Advances in Physics* Vol. 3, No. 4.29-38pp.. (Australia)
13. Kolebaje, O. T., & Popoola, O. O. (2014). Exact solution of fractional STO and Jimbo-Miwa equations with the generalized Bernoulli equation method. *The African Review of Physics*, 9.
14. Vincent, U.E., **Popoola, O.** and Talabi, A. (2015). Hyperbolic Stabilization and Synchronisation in a Flux-Controlled Memristor System. *Journal of the Nigerian Association of Mathematical Physics*. Vol. 29. 1- 10pp. (Nigeria)
15. **Popoola, O.** and Okon, I.B. (2015). Bound-State Solution of Klein-Gordon Equation with Combined Potentials Using Nikoforov-Uvarov Method. *Journal of the Nigerian Association of Mathematical Physics*. Vol. 32. 9-16pp. (Nigeria)
16. Okon, I.B. and **Popoola, O.** (2015). Bound-State Solution of Schrodinger Equation With Hulthen Plus Generalised Exponential Coulomb Potential Using Nikiforov-Uvarov Method. *International Journal of Recent Advances in Physics* Vol. 4. No.3. 1-12pp. (Australia)
17. Okon, I.B., **Popoola, O.** and Ituen, E.E. (2015). Bound State Solution to Schrodinger Equation With Modified Hylleraas Plus Inversely Quadratic Potential Using Supersymmetric Quantum Mechanics Approach.



*International Journal of Recent Advances in Physics*. Vol.4. No. 4. 27-39pp. (Australia)

18. Okon, I.B., **Popoola, O.** and Ituen, E.E. (2016). Bound State Solution to Schrodinger Equation with Hulthen Potential Barrier Using Parametric Nikiforovuvarov Method. *International Journal of Recent Advances in Physics* Vol. 5. No. 2. 1-15pp. (Australia)
19. Roy-Layinde T.O., Laoye J.A., Popoola O., Vincent U.E. (2016) Analysis of Vibrational Resonance in Bi-harmonically Driven Plasma. *Chaos: an interdisciplinary journal of Nonlinear Science*. Vol. 26. No. 9. 093117 (USA)
20. Roy-Layinde, T. O., Laoye, J. A., Popoola, O. O., Vincent, U. E., & McClintock, P. V. E. (2017). Vibrational resonance in an inhomogeneous medium with periodic dissipation. *Physical Review E*, 96(3), 032209.
21. Agunbiade, G. S., Taiwo, A., Popoola, O., Matthew, F.(2017) Characterization of Lorenz-Like System and Estimation of Maximum Lyapunov Exponent. (2017). *International Journal in Physical and Applied Sciences*, 4(7), 12–22.
22. Taiwo, A., Popoola, O., Matthew, F., Agunbiade, G. S., Adesakin, G. E. (2017) Modified Analytical Embedded Atomic method (MAEAM) Interatomic Potentials for Body Centred Cubic (BCC) Transition Metals and Vacancy Mechanism. *International Journal of Scientific Research*, 6(4), 5.
23. Popoola, O., & Olasupo, R. I. (2017). Investigating the pathway to chaos in a simple pendulum. *Journal of the Nigerian Association of Mathematical Physics*, 39, 97–104.
24. Okon, Ituen B., Popoola, O., & Isonguyo, C. N. (2017a). Approximate Solutions of Schrodinger Equation with Some Diatomic Molecular Interactions Using Nikiforov-Uvarov Method. *Advances in High Energy Physics*, 2017(1), 9671816.
25. Okon, Ituen B., Popoola, O., & Isonguyo, C. N. (2017b). Expectation Values of Some Diatomic Molecules With Quantum Interaction Potential In Schrodinger Equation with Hellmann-Feynman Theorem Via Conventional Nikiforov-Uvarov Method. arXiv Preprint arXiv:1702. 03923.

- 26.. Vincent, U. E., Roy-Layinde, T. O., Popoola, O. O., Adesina, P. O., & McClintock, P. V. E. (2018). Vibrational resonance in an oscillator with an asymmetrical deformable potential. *Physical Review E*, 98(6), 062203.
27. Okon, Ituen B., Popoola, O., Isonguyo, C. N., & Antia, A. D. (2018). Solutions of Schrödinger and Klein-Gordon equations with Hulthen plus inversely quadratic exponential Mie-type potential. *Physical Science International Journal*, 19(2), 1–27.
- 28 Laoye, J. A., Roy-Layinde, T. O., Omoteso, K. A., Popoola, O. O., & Vincent, U. E. (2019). Vibrational resonance in a higher-order nonlinear damped oscillator with rough potential. *Pramana*, 93, 1–10.
- .29. Laoye, J. A., Roy-Layinde, T. A., Omoteso, K. A., Popoola, O., & Uchechukwu, V. (2020). Correction to: Vibrational resonance in a higher-order nonlinear damped oscillator with rough potential. *PRAMANA J-PHYS*.
30. Okon, Ituen B., Isonguyo, C. N., Antia, A. D., Ikot, A. N., & Popoola, O. O. (2020). Fisher and Shannon information entropies for a noncentral inversely quadratic plus exponential Mie-type potential. *Communications in Theoretical Physics*, 72(6), 065104.
- 31.. Kolebaje, O., Popoola, O., Khan, M. A., & Oyewande, O. (2020). An epidemiological approach to insurgent population modeling with the Atangana--Baleanu fractional derivative. *Chaos, Solitons & Fractals*, 139, 109970.
- 32.. Roy-Layinde, T. O., Vincent, U. E., Abolade, S. A., Popoola, O. O., Laoye, J. A., & McClintock, P. V. E. (2021). Vibrational resonances in driven oscillators with position-dependent mass. *Philosophical Transactions of the Royal Society A*, 379(2192), 20200227.
- 33.. Okon, Ituen B., Popoola, O. O., Omugbe, E., Antia, A. D., Isonguyo, C. N., & Ituen, E. E. (2021). Thermodynamic properties and bound state solutions of Schrodinger equation with Mobius square plus screened-Kratzer potential using Nikiforov-Uvarov method. *Computational and Theoretical Chemistry*, 1196, 113132.
34. Kolebaje, O., Popoola, O. O., & Vincent, U. E. (2021). Occurrence of Vibrational resonance in an oscillator with an asymmetric Toda potential. *Physica D: Nonlinear Phenomena*, 419, 132853.

35. Okon, I. B., Onate, C. A., Horchani, R., Popoola, O. O., Omugbe, E., William, E. S., ... Others. (2023). Thermomagnetic properties and the effects on fisher entropy with Schioberg plus Manning-Rosen potential (SPMRP) using Nikiforov-Uvarov functional analysis (NUFA) and Supersymmetric quantum mechanics (SUSYQM) methods. *Sci Rep* 13. 8193.
36. Oyeniya, E., Akin-Ojo, O., & Popoola, O. O. (2023). oeINDO: Efficient determination of excitation energies and UV-Vis absorption spectra of nano-sized Zn, Cd, S and their complexes. *Computational and Theoretical Chemistry*, 1223, 114096.

- (f) Books, Chapters in Books and Articles already accepted for publication: Nil
- (g) Technical Reports and Monographs Nil

XI

Major Conferences Attended with Papers Read (in the last 5 years):

1. The Organization for Women in Science for Developing World 6<sup>th</sup> General Assembly and International Conference, November 8-19, 2021.(Online)
2. Applied and computational algebraic geometry (EMGW02), Isaac Newton Institute for Mathematical Sciences, Cambridge, 22-26 January, 2024.(Online)
3. 2024 Academic Workshop, Faculty of Science, University of Ibadan. 10 September, 2024.

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Signature

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Date

