

Aliyu Adamu, Ph.D.

University Lecturer / Nuclear Physicist / Radiation Dose Evaluation Expert

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PROFESSIONAL SUMMARY

Dedicated and results-driven Nuclear Physicist and University Lecturer with over 10 years of experience in teaching, research, academic leadership, and professional service. Specialised in Theoretical Nuclear Physics, Radiation Dose Evaluation, Environmental Radioactivity, Radiation Protection, and Environmental Contamination Analysis. Demonstrated expertise in postgraduate research supervision, research grant development and management, scientific publication, curriculum development, academic administration, and peer review. Proven leadership experience in strategic planning, quality assurance, professional organisations, and scholarly publishing, with a strong commitment to advancing nuclear science, radiation safety, research excellence, and interdisciplinary collaboration.

EDUCATION

Ph.D. in Physics (Nuclear Physics) – *University of Maiduguri* 2024

- ~ Thesis: *Application of first-order Time-Independent Perturbation Theory in the Interpretation of Nuclear Structure Effect*
- ~ Focused on nuclear potential models and α -decay, applying enhanced models for alpha decay in nuclear finite-size potentials.

M.Sc. in Nuclear Physics – *University of Maiduguri* 2015

- ~ Dissertation: *Effects of first-order Time-Independent Perturbation Theory on the Finite-Size Nucleus*
- ~ Conducted advanced research on radiation dose assessment and evaluation in healthcare settings.

PROFESSIONAL EXPERIENCE

Head of Department (HOD):

Department of Physics, University of Maiduguri, Maiduguri, Nigeria

2025 – Present

- ✓ Provide strategic leadership and administrative oversight for the Department of Physics.
- ✓ Coordinate academic planning, curriculum development, quality assurance, and programme accreditation in accordance with National Universities Commission (NUC) standards.
- ✓ Chair departmental board meetings and oversee staff workload allocation, student affairs, and departmental committees.
- ✓ Promote excellence in teaching, research, innovation, and community engagement.
- ✓ Lead strategic initiatives for postgraduate education, staff development, research collaboration, and infrastructure development.

Lecturer:

Department of Physics, University of Maiduguri, Maiduguri, Nigeria

2015 – Present

- ✓ Teach undergraduate and postgraduate courses in Nuclear Physics, Quantum Physics, Atomic and Molecular Physics, Radiation Physics, Medical Physics, Environmental Physics, and Computational Physics.
- ✓ Supervise undergraduate, M.Sc., and Ph.D. research projects in Nuclear Physics, Radiation Dosimetry, Radiation Protection, Environmental Radioactivity, and Medical Physics.
- ✓ Conduct theoretical and applied research in Nuclear Physics, Radiation Dose Evaluation, Environmental Radioactivity, Radiation Shielding, and Computational Radiation Physics.
- ✓ Develop analytical and computational models for radiation interaction with matter, charged-particle stopping powers, radiation transport, and shielding optimisation.
- ✓ Publish research findings in high-quality peer-reviewed journals and present papers at national and international scientific conferences.
- ✓ Participate in curriculum development, programme accreditation, examination moderation, and departmental quality assurance.
- ✓ Mentor students and early-career researchers in scientific writing, research methodology, and academic publishing.

Editor-in-Chief (Founding):

University of Maiduguri Journal of Physics and Radiation Studies (UIPRS)

2025 – Present

- ✓ Provide strategic, scientific, and editorial leadership for the University's peer-reviewed journal in Physics and Radiation Studies.
- ✓ Develop editorial policies, peer-review procedures, publication ethics, and governance structures in accordance with international best practices.
- ✓ Oversee manuscript screening, reviewer selection, editorial decisions, production, and publication workflows.
- ✓ Coordinate the Editorial Board and lead initiatives aimed at indexing the journal in major international databases.
- ✓ Promote scholarly excellence, research integrity, and global visibility of the journal.

Vice Chairman

Nigerian Institute of Physics (NIP), Borno State Chapter

2025 – Present

- ✓ Assist in providing strategic leadership for the State Chapter of the Nigerian Institute of Physics.
- ✓ Coordinate scientific meetings, conferences, workshops, and professional development programmes.
- ✓ Promote collaboration among academia, industry, and government institutions to advance physics education, research, and innovation.
- ✓ Support membership development and represent the Chapter at national professional meetings and scientific events.

Assistant Examination Officer

Department of Physics, University of Maiduguri, Maiduguri, Nigeria

2023 – 2025

- ✓ Assisted in planning, coordinating, and administering undergraduate and postgraduate examinations.
- ✓ Coordinated examination timetables, secure handling of examination materials, and processing of examination results.
- ✓ Ensured compliance with university regulations and quality assurance standards.
- ✓ Supported examination moderation, record management, and continuous improvement of assessment processes.

Visiting Lecturer

Al-Ansar University, Maiduguri, Nigeria

2023 – Present

- ✓ Deliver undergraduate lectures in Physics and mentor students in laboratory practice, research methodology, and scientific writing.
- ✓ Support curriculum implementation and contribute to academic quality assurance and student development.

Postgraduate Representative (M.Sc. Programmes)

Departments of Geology, Statistics, and Mathematics, University of Maiduguri, Nigeria

2024 – 2026

- ✓ Represent M.Sc. students on postgraduate academic and administrative matters across the Departments of Geology, Statistics, and Mathematics.
- ✓ Serve as the liaison between postgraduate students and departmental authorities to facilitate effective communication and timely resolution of academic issues.
- ✓ Advocate for student welfare and contribute to initiatives that enhance postgraduate teaching, research, and academic excellence.

Visiting Lecturer

Borno State University, Maiduguri, Nigeria

2019 – Present

- ✓ Teach undergraduate courses in Quantum Physics, Computational Physics, Environmental Physics, Atomic and Molecular Physics, and Nuclear and Particle Physics.
- ✓ Supervise student research projects and contribute to curriculum development, examination moderation, and departmental academic planning.
- ✓ Support initiatives that strengthen teaching quality and research capacity within the Department.

Students' Industrial Work Experience Scheme (SIWES) Coordinator

Department of Physics, University of Maiduguri, Maiduguri, Nigeria

2019 – 2023

- ✓ Coordinated the implementation of the Students' Industrial Work Experience Scheme (SIWES) for undergraduate Physics students.
 - ✓ Facilitated industrial placements in research institutes, hospitals, industries, and government agencies.
 - ✓ Conducted industrial supervision visits and evaluated students' performance, logbooks, and technical reports.
 - ✓ Strengthened partnerships between the University and industry to enhance experiential learning, practical skills, and graduate employability.
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RESEARCH PROJECTS AND GRANTS

- ~ **Co-Principal Investigator: Determination of Concentration and Dose Levels from Orphan Radioactive Source (Scrap Metals) in North-eastern Nigeria**
 - ✓ Conducted fieldwork across five key regions to assess the biological impact of orphan radioactive sources.
 - ~ **Co-Principal Investigator: Impact of Radionuclide Activity and Heavy Metals on Kidney Disease Prevalence in Borno, Nigeria**
 - ✓ Coordinated a multidisciplinary study investigating environmental health risks related to contaminated water sources.
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PROFESSIONAL SKILLS & COMPETENCIES

- ~ **Nuclear Physics & Nuclear Modelling** – Nuclear structure, nuclear radii, nuclear potentials, α -decay, nuclear interactions, and theoretical modelling
- ~ **Radiation Physics & Dosimetry** – Radiation dose evaluation, radiation protection, radiation safety, and dose assessment
- ~ **Environmental Radioactivity** – Environmental contamination analysis, radionuclide assessment, heavy-metal contamination, and radiological risk assessment
- ~ **Radiation Shielding & Transport** – Radiation interaction with matter, shielding analysis, charged-particle stopping powers, and computational radiation physics
- ~ **Research & Scientific Computing** – Theoretical modelling, computational analysis, scientific data interpretation, and research methodology
- ~ **Academic Leadership & Administration** – Strategic planning, curriculum development, quality assurance, programme accreditation, examination administration, and postgraduate coordination

- ~ **Research Management** – Research proposal development, grant writing, project coordination, multidisciplinary collaboration, and research supervision
 - ~ **Scientific Publishing & Peer Review** – Academic writing, manuscript development, peer review, editorial management, publication ethics, and scholarly communication
 - ~ **Postgraduate Supervision & Mentoring** – Supervision of undergraduate, M.Sc., and Ph.D. research projects and mentoring of early-career researchers
 - ~ **Professional & Institutional Engagement** – Professional association leadership, conference/workshop coordination, stakeholder engagement, and community-oriented scientific initiatives
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PUBLICATIONS

- Aliyu Adamu, Muhammad Hassan, Salamatu S. Jere, Musa H. Umar (2026). Quantification and Evaluation of Radon-222 in Groundwater of Flood-Affected Areas in Borno State, North-Eastern Nigeria: Implications for Lung Cancer Risk. *Ethiopian Journal of Science and Sustainable Development*, Volume 13 (1). <https://doi.org/10.20372/ejssdastu:v13.i1.2026.1012>
- Hamza Umar, Ibrahim W Fawole, Aliyu Adamu, Atef El-Taher (2026). Health Effects Assessment of Personnel Exposed to Radiation from Background and Scattered Radiation around X-ray Machines at Federal Neuropsychiatric Hospital, Maiduguri. *Journal of Radiation and Nuclear Applications* 11(1):23. <https://doi.org/10.18576/jrna/110104>
- Hassan, M., Jere, S. S., & **Adamu, A.** (2025). Assessment of Heavy Metals in Groundwater and Their Association with Kidney Disease in Flood-Affected Areas of Maiduguri, North-Eastern Nigeria. *Arid Zone Journal of Basic and Applied Research (AJBAR)*, 4(3), 1–10. <https://doi.org/10.55639/607.02010041>
- Ngadda, Y. H., Adamu, A., & Samaila, H. (2025). Assessment of environmental heavy metal contamination in scrap metal-polluted and flood-affected soils in Maiduguri and its environs, North-Eastern Nigeria. *Arid Zone Journal of Basic and Applied Research (AJBAR)*, 4(6), 156–168. <https://doi.org/10.55639/607.02010090>
- Ibrahim, N., Okorie, U. S., Adamu, A., Ikot, A. N (2025). Magnetic Properties of Titanium Carbide (Tic) Diatomic Molecule Under the Influence of Magnetic and Aharonov–Bohm Flux Fields at Finite Temperature. *Journal of NAMP* 71, 139-150. <https://doi.org/10.60787/jnamp.vol71no.606>
- Adamu, A.** (2025). The modification of nuclear potentials based on charge distribution inside the nucleus. *Journal of Radiation and Nuclear Applications*, 10(2), 1–4. <http://dx.doi.org/10.18576/jrna/100201>
- Umaru, B., Yusuf, S. D., Idris, M. M. and **Adamu, A** (2025). Establishing Local Diagnostic Reference Levels for Common Xray Examinations at the Federal Neuro-Psychiatric Hospital

- Maiduguri, Nigeria. *Journal of Radiation and Nuclear Applications*. 10, No. 1, 7-11. <http://dx.doi.org/10.18576/jrna/100102>
- Aliyu Adamu, Usman A. Marte, Abdullahi U. U. Ocheni, Babagana Umaru, M. I. Bukar and Mamman Rawagana (2025). The Effect of Thermal and Zero-Point Energy of Quantum Vacuum on Spectra of Finite-Sized Nucleus of Hydrogen-Like Atoms, *Transactions of NAMP* 21, 27-40. <https://doi.org/10.60787/tnamp.v21.471>
- Bukar, M. I., Yakubu, N., **Adamu, A.** and Rawagana, M. (2024). Critical Examination of Gamow's Theory of Alpha Particle Decay. *Nigerian Journal of Physics (NJP)*, Volume 33(5) 2024. [https://doi.org/10.62292/njp.v33\(s\).2024.227](https://doi.org/10.62292/njp.v33(s).2024.227)
- Adamu, A.** (2024). Exploring the Role of Vacuum Fluctuations on Nuclear-Lepton Interactions in Atomic Systems. *Journal of Radiation and Nuclear Applications*, Vol. 9, No. 1, 27-32. <http://dx.doi.org/10.18576/jrna/090105>
- Maina, M., **Adamu, A.**, Sanda, M. and Bukar, M. I. (2023). The Bohr Model of the Atom: A Critical Evaluation of its Impact and Limitations in Modern Physics. *Journal of Science and Technology Research*, Volume 5, Number 3, pp. 180-193.
- Adamu, A.**, Ngadda, Y. H., and Hassan, M. (2023). The Direct Nuclear Charge Radii Measurement from Potential Wavefunction. *Nigerian Journal of Physics (NJP)*, Volume 32(1), 67-75.
- Sanda, M., Atom, T. I., Hussaini, A. and **Adamu, A.** (2023). Assessing the Levels of Heavy Metal Contamination in Surface Water of Alau Dam in Maiduguri, Nigeria. *NIPES Journal of Science and Technology Research*, 5(2) 2023 pp. 378-384.
- Adamu, A.** and Ngadda, Y. H. (2022). An Analytical Formula for $1s\ 2s2p\ 3s3p3d$ Energy Shifts of Finite-Size Nuclei due to Fluctuating Vacuum Fields. *Arid Zone Journal of Basic and Applied Research*, *AJBAR* Volume 1, Number 5, page 136-147.
- Adamu, A.**, Shallholma A. Ephraim and Garba Ibrahim (2022). Determination of Gross Alpha and Gross Beta Activities, and the Corresponding Radiological Risk. Parameters in Water Samples from Dзамah Community, Hong, Nigeria. *Journal of Radiation and Nuclear Applications*, Volume 7, No. 2, page 7-13.
- Adamu, A.** (2021) A New Measurement of Nuclear Radius from the study of β^+ -Decay Energy of Finite-Sized Nuclei. *Journal of Radiation and Nuclear Applications*, Volume 6, Number 1, page 45-49.
- Ashalva, J. B., Abayomi, F. K., Francis, E. O., Ali, S., Ngadda, Y. H. Hassan, M. and **Adamu, A.** (2021). A Survey of the Weekday Outdoor Noisescapes at Students' Hostels, University of Maiduguri, Nigeria using Android Smartphones. *IOSR Journal of Applied Physics (IOSR-JAP)*, Volume 13, Number 5, page 34 – 44.

- Adamu, A.**, Morris, M., Langa, E. D. and Ibrahim, G. (2021). Assessment of Radiation Dose for Patients during X-ray Procedures in University of Maiduguri Teaching Hospital, Nigeria. *Journal of Radiation and Nuclear Applications*. Volume 6, Number 2, page 163 – 169.
- Umaru, B. and **Adamu, A.** (2021). Determination of Entrance Surface Dose of Patients Undergoing X-Ray Examination in Federal Neuropsychiatric Hospital Maiduguri, Nigeria. *IOSR Journal of Applied Physics (IOSR-JAP)*, Volume 13, Number 2, page 26 – 29.
- Adamu, A.** (2020). A Proposed $Z^{1/3}$ – Dependence Formula for Nuclear Potential Radii with Constant Parameter for both Heavy and Light Nuclei. *Journal of Energy Technology and Environment* Volume 2, page 51 – 57.
- Langa, E. D., **Adamu, A.** and Meludu, O. (2020). Occupational Radiation Dose Evaluation in University of Maiduguri Teaching Hospital, Maiduguri, Nigeria. *Journal of Radiation and Nuclear Applications*, Volume 5, No. 3, page 181 – 186.
- Adamu, A.**, Ngadda, Y. H., Hassan, M. and Malgwi, D. I. (2020). The Coulomb Energy of Finite Size Nucleus from the Study of Classical Electrodynamics Theory. *NIPES Journal of Science and Technology Research*, Volume 2, Number 3, page 272 – 282.
- Adamu, A.**, Hassan, A., Abdulkadir, A. and Ngari, A. Z. (2020). The Analytical Modeling of Nuclear Size Effect on Relativistic Electron in Hydrogen Atom. *NIPES Journal of Science and Technology Research*, Volume 2, Number 3, page 36 – 44.
- Maina, M., Maidugu, D. W., **Adamu, A.** and Balami, S. D. (2020). Compaction as Affected by Bulk Density and Dry Density of a Soil. *IOSR Journal of Applied Physics (IOSR-JAP)*, Volume 12, Issue 4 Ser. II, page 6 – 13.
- Hassan, M., Ngadda, Y. H. and **Adamu, A** (2020). Health Risk Assessment of some Heavy Metals in Drinking Water Due to Mining Activities in Gombe Area, Northeastern Nigeria. *IOSR Journal of Environmental Science, Toxicology and Food Technology (IOSR-JESTFT)*, Volume 14, Number 7, page 37 – 42.
- Hassan, M., Ngadda, Y. H. and **Adamu, A** (2020). Measurement of Levels of Concentrations of Some Heavy Metals in Soils of Some Selected Areas of Pindiga, Nigeria. *NIPES Journal of Science and Technology Research*, Volume 2, Number 2, page 35 – 42.
- Hassan, M., Ngadda, H. Y. and **Adamu, A** (2020). Health Risk Assessment of Radionuclides in Soil and Sediments of some Selected Areas of Pindiga, Nigeria. *Journal of Radiation and Nuclear Applications; An International Journal*, Volume 5, Number 2, page 95 – 103.
- Amshi, S. A., Bababe, A. B., Saquib, M. and **Adamu, A** (2020). Chronic Kidney Disease Associated with Consumption of Vegetables Cultivated on Contaminated Soil in Gashua, Yobe State – Nigeria. *SSRG International Journal of Pharmacy and Biomedical Engineering (SSRG-IJPBE)*, Volume 7, issue 1, page 1 – 5.
- Adamu, A.**, Ngadda, Y. H. and Hassan, M. (2019). The Effect of Vacuum Fields Fluctuation on Orbiting Electron. *Nigerian Institute of Physics*, Volume 27, Number 1, page 184 – 190.

- Dikwa, M. K., Akan, J. C. and **Adamu, A.** (2019). Determination of Some Heavy Metals in Roadside Soils from Some Major Roads in Maiduguri, Borno State, Nigeria. *Nuclear Science*. Volume 4, Number 3, page 27 – 33.
- Amshi, S. A., **Adamu, A.**, Yesufu, H. and Milagawanda, H. (2019). Health Risk Assessment of some Heavy Metals (Cd, Pb, Cr) in Soil Sample from Gashua, Yobe, Nigeria. *Journal of Science and Technology Research*, Volume 1, Number 2, page 136 – 143.
- Amshi, S. A., Iliya, I and **Adamu, A.** (2019). Chronic Kidney Disease Associated With Heavy Metals (Cr, Pb, Cd) Analyzed From Irrigation Water of Gashua, Yobe, Nigeria. *IOSR Journal of Applied Chemistry (IOSR-JAC)*, Volume 12, Issue 5 Ser. I, page 53 – 58.
- Adamu, A.**, Mustapha, F. M. and Dikwa, M. K. (2019). Determination of Nuclear Radius Parameter from β^+ Transformation Energy of Mirror Nuclei. *Journal of Science and Technology Research*, Volume 1, Number 1, page 137 – 148.
- Adamu, A.**, Hassan, M., Dikwa, M. K. and Amshi, S. A., (2018). Determination of Nuclear Structure Effects on Atomic Spectra by Applying Rayleigh–Schrödinger Perturbation Theory. *American Journal of Quantum Chemistry and Molecular Spectroscopy*, Volume 2, Number 2, page 39 – 51.
- Mustapha, F. M and **Adamu, A.** (2019). The Investigating the Performance Efficiency of a PV Powered Solar Dryer (a Case Study of Damaturu, Yobe State – Nigeria). *Journal of Physical Science and Innovation*, Volume 11, Number 1, page 16 – 32.
- Yakubu, N., Huwusu, S. X. K. and **Adamu, A.** (2018). Gravitational Field of a Stationary Homogeneous Oblate Spheroidal Massive Body, *International Journal of Theoretical and Mathematical Physics*, Volume 8, Number 3, page 62 – 70.
- Adamu, A.**, Langa, E. D., Abbas, B. K., Olawale, A. R. and Balami, B. Y. (2017), Nuclear Size Corrections to the Isotope Shifts of Single-Electron and Single-Muon Atoms. *Journal of Physical Science and Innovation*, Volume 9, Number 1, page 1 – 14.
- Adamu A.** and Ngadda Y. H., (2017): Determination of Nuclear Potential Radii and Its Parameter from Finite – Size Nuclear Model. *International Journal of Theoretical and Mathematical Physics*, Volume 7, Number 1, page 9 – 13.
- Adamu, A.**, Tartius, P. and Amshi, S. A., (2016): The Spectroscopy of Single Electron and Muonic Atoms. *Journal of Physical Science and Innovations*, Volume 8, Number 2, page 1 – 13.
- Adamu A.**, (2016): Corrections to the Energy Levels of Finite – Size Nuclei due to Fluctuating Electromagnetic Fields in Vacuum. *J – NAMP*, Volume 36, (July Issue), page 215 – 222.
- Adamu, A.** and Ngadda, Y. H., (2015): The Nuclear Finite–Size Corrections to Energies of $n = 1$, $n = 2$ and $n = 3$ States of Hydrogen Atom. *J – NAMP*, Volume 30, page 137 – 137.
- Adamu, A.** and Ngadda, Y. H., (2015): The Effect of Finite Size Nuclear Potential on $1s2s2p$ Energy States of Light and Heavy Nuclei. *J – NAMP*, Volume 28, Number 2, page 351 – 357.

Adamu, A. and Ngadda, Y. H., (2014): The Effect of 1st Order Time Independent Perturbation on the Finite Size of the Nuclei of Atoms. *J – NAMP*. Volume 28, Number 1, page 333 – 339.

COMMUNITY SERVICE

- 1 Development Knowledge Facilitator, *NYSC-Millennium Development Goals (MDGs) Advocacy Project* 2009
- 2 Member, *Sub-committee on Nuclear Education* 2021
- 3 Reviewer, *Archives of Current Research International*
- 4 Reviewer, *Arid Zone Journal of Basic and Applied Research*
- 5 Reviewer, *Asian Journal of Advanced Research and Reports*
- 6 Reviewer, *Asian Journal of Biochemistry, Genetics and Molecular Biology*
- 7 Reviewer, *Asian Journal of Environment and Ecology*
- 8 Reviewer, *Asian Journal of Medical Case Reports*
- 9 Reviewer, *Asian Journal of Medical Principles and Clinical Practice*
- 10 Reviewer, *Asian Journal of Medicine and Health*
- 11 Reviewer, *Asian Journal of Research and Reviews in Physics*
- 12 Reviewer, *Current Journal of Applied Science and Technology*
- 13 Reviewer, *European Journal of Nutrition & Food Safety*
- 14 Reviewer, *International Journal of Plant & Soil Science*
- 15 Reviewer, *International Journal of Tropical Disease & Health*
- 16 Reviewer, *Journal of Advances in Medical and Pharmaceutical Sciences*
- 17 Reviewer, *Journal of Energy Research and Reviews*
- 18 Reviewer, *Journal of Excellence in Reviewing*
- 19 Reviewer, *Journal of Geography, Environment and Earth Science International*
- 20 Reviewer, *Journal of Pharmaceutical Research International*
- 21 Reviewer, *Journal of Scientific Research and Reports*
- 22 Reviewer, *Journal of the Nigerian Society of Physical Sciences*
- 23 Reviewer, *P B International*
- 24 Reviewer, *Physical Science International Journal*
- 25 Reviewer, *Uttar Pradesh Journal of Zoology*

PROFESSIONAL AFFILIATIONS

- ~ Member, Nigerian Institute of Physics (NIP)
- ~ Member, Nigerian Institute of Professional Engineers and Scientists (NIPES)

AWARDS AND RECOGNITIONS

Award of Excellence, Department of Physics, Kashim Ibrahim University — 2024/2025 Academic Session (In recognition of outstanding guidance, dedication, and support)

CONFERENCES AND WORKSHOPS

- ~ Workplace Employability & Effectiveness Skills
- ~ Project Management Professional