

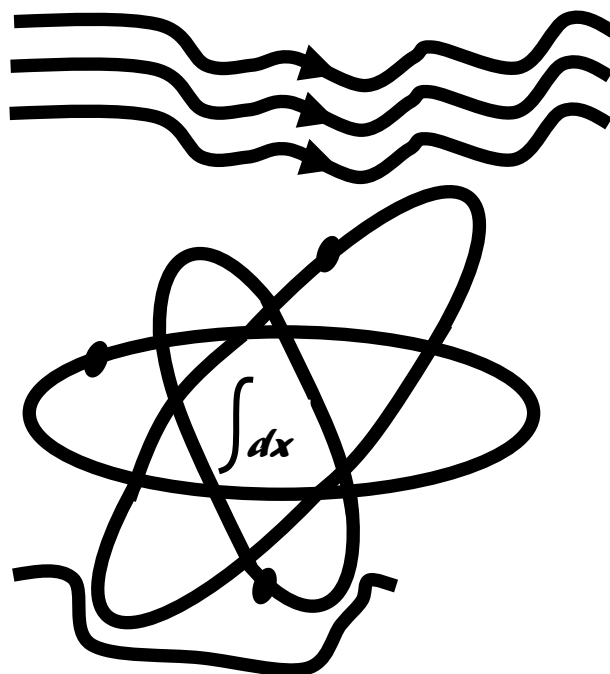
V *olume*

59

January - March Issue 2021

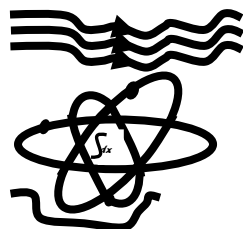
J **OURNAL**
of the

NIGERIAN ASSOCIATION OF MATHEMATICAL PHYSICS



Published by

Nigerian Association of Mathematical Physics



**THE NIGERIAN ASSOCIATION OF MATHEMATICAL PHYSICS
(NAMP)**

Editorial Board for NAMP JOURNAL

Professor G. Babaji,
Department of Physics,
Bayero University, Kano, Nigeria.

Professor R. Akin-Ojo,
Department of Physics, University of Ibadan, Nigeria.

Professor G. O. S. Ekhaguere,
Department of Mathematics,
University of Ibadan, Nigeria.

Professor A. O. E. Animalu,
Department of Physics,
University of Nigeria, Nsukka, Nigeria.

Professor G. C. Asomba,
Department of Physics,
University of Nigeria, Nsukka, Nigeria.

Professor E. O. Okeke
Department of Mathematics and Computer Science,
Western Delta University,
Oghara, Delta State, Nigeria.

Professor J. O. A. Idiodi,
Department of Physics,
University of Benin, Nigeria.

Professor J.O. Fiase
Department of Physics,
Benue State University, Makurdi, Nigeria.

Professor Vincent Asor
Department of Mathematics,
Michael Okpara University of Agriculture, Umudike, Nigeria.

Council of NAMP

Professor G. Babaji/Bayero University Kano/Nigeria/Nigeria/President
Professor Vincent Asor/Michael Okpara University of Agriculture, Umudike/Nigeria/Vice-President
Professor E.O. Oghre/University of Benin, Benin City/Nigeria/Secretary
Dr. Mrs. K-K.A. Abdullah/Olabisi Onabanjo University, Ago-Iwoye/Asst. Secretary
Professor A.O. Popoola/Osun State University, Osogbo/Nigeria/Treasurer
Professor John O.A. Idiodi/University of Benin, Benin City/Nigeria/Editor-in-Chief

Correspondence

All correspondence relating to NAMP Publications and the submission of articles for publication
Should be addressed to the **Editor-in-Chief**, whose address is:

Professor John O.A. Idiodi,
Department of Physics,

University of Benin, Benin City, Nigeria.

Email: jidioidi@hotmail.com; Tel. +2348037994106

For further information, check our website: www.nampjournals.org.

The Nigerian Association of Mathematical Physics, January – March Issue, 2021

Journal of the nigerian association of mathematical physics



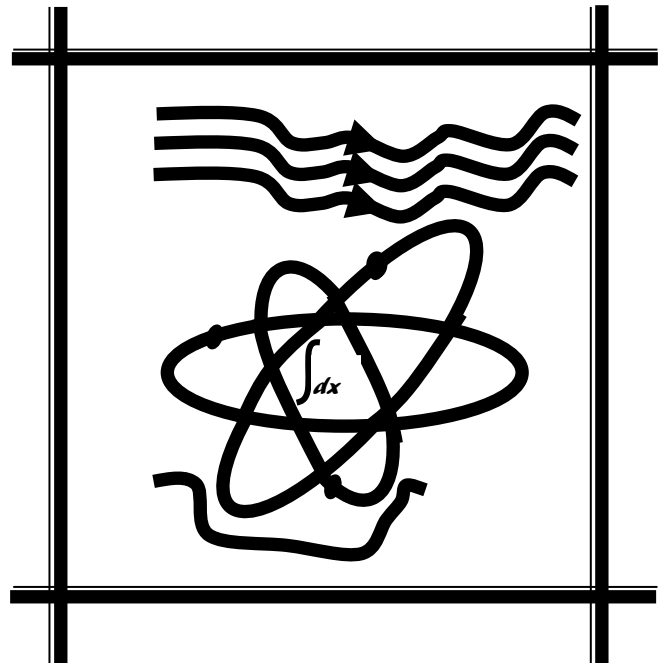
JOURNAL
of the

NIGERIAN ASSOCIATION OF MATHEMATICAL PHYSICS

Volume 59

January – March Issue, 2021

ISSN: 1116-4336



Published by

Nigerian Association of Mathematical Physics

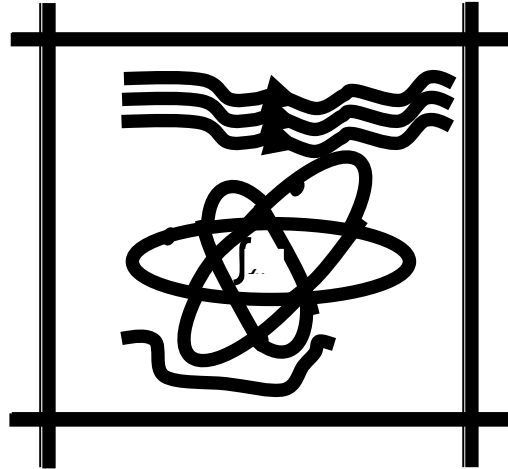
Printed and bound in Nigeria by:

**AMBIK Press td.,
4, Otiye-Odibi Avenue,
Isiohor,
Benin City, Nigeria.
Phone: +2348037113845**

JNAMP Typesetter: Dr. Ben. Iyorzor, e-mail: beniyorzor@yahoo.com, Tel.: +2347035400919

Journal of the Nigerian Association of Mathematical Physics Volume 59, January - March Issue, 2021

FOREWORD



The symbolism of the NAMP

- (1) The 3-wavy arrowed lines at the top have a dual significance:
 - (a) Taken together, they represent **vector fields**, the building blocks of the theory of **dynamical systems** which is the bridge across many facets of mathematical physics.
 - (b) The lowest of the 3 lines defines the northern border of Nigeria.
- (2) The wavy overlapping electron orbits symbolize **physics**, while the integral at their core is **mathematics**, the core or nucleus of mathematical physics.
- (3) The wavy line at the bottom is the southern border of Nigeria.
- (4) Thus, the symbols taken together represent mathematical physics located in Nigeria.

However, the geographical outline of the country, as represented in the logo, is open at the sides, which means that the association is free to interact horizontally with its sister organizations at its own level, outside the country, without any hindrance imposed by national boundaries.

Although NAMP was formally inaugurated in 1979, the discussions and consultations that led to its foundation commenced in 1978. Those who participated in the discussion were Professor Chike Obi, Dr. Eden Akinrelere, Professor Awele Maduemezia, Mr. Titus Akindele, Professor Sunday Iyahan and Dr. Donatus Uzodinma. An unsuccessful attempt was made by Professor Chike Obi to register the association with the Ministry of Trade on June 29, 1978, under the name Nigeria Society for Mathematical Sciences.

In May, 1979, Dr. G.O.S. Ekhaguere wrote to Professor Awele Maduemezia and proposed a National Colloquium or workshop on Mathematical Physics. Funds were sought, and the first National Colloquium on Mathematical Physics was successfully held at the Department of Physics, University of Ibadan, from 12 to 15 December, 1979. Participants came from eight of the thirteen universities that existed in the country at that time, and from the College of technology, Ilorin. The eight universities were Ahmadu Bello University (ABU), Zaria, University of Ibadan (UI), University of Ife (now Obafemi Awolowo University), Bayero University, Kano, University of Ilorin (Unilorin), University of Lagos (Unilag), University of Nigeria, Nsukka (UNN).

During the Plenary session on Thursday, December 13, 1979, commencing at 3.35pm., in room B11 of the Department of Physics, 22 of the 31 participants were present. The meeting was presided over by Awele Maduemezia FAS. the secretary was Dr. G.O.S. Ekhaguere. At the meeting it was revealed that the Nigerian Academy of Science provided the Local Organising Committee with secretariat assistance, while the National science and Technology Development Agency provided a grant of N1,000.00 (One thousand naira only) towards the publication of the proceedings of this first colloquium on Mathematical Physics. During the meeting, it was noted that there were only very few scientists in the country who could strictly speaking be called *Mathematical Physicists*. For this reason, it was decided that the term *Mathematical Physics* should be broadened to mean: *Any scientist who applied fairly rigorous mathematics to physics, chemistry, engineering, or other sciences, and also any mathematician whose results have direct applicability in physics, chemistry, engineering and so forth.*

The Journal of the Nigerian Association of Mathematical Physics

The house unanimously agreed that there was a need to form an association, which would bring together all the mathematical physicists, as defined above. A motion to this effect was formally tabled by Prince Dr. O.A. Odundun of the Department of Physics, University of Ife, Ile-Ife and seconded by Dr. J. Adetunji of the Department of Physics, Ahmadu Bello University, Zaria. The motion read as follows:

That those here present constitute themselves into a body to be known as and called the NIGERIAN ASSOCIATION OF MATHEMATICAL PHYSICS (NAMP). The motion was carried unanimously, and the following inaugural executive was elected

President: Professor Awele Maduemezia, FAS,

Secretary: Dr. G.O.S. Ekhaguere

Treasurer: Dr. G.O. OluremiOlaofe

Ex-officio Members: Professor C. Amazigo
Professor M.A. Rashid
Dr. C.O. Afolayan

On the same day, that is, 13th December, 1979, the new President of NAMP designed the logo shown above for the association, with the symbolism indicated. In a great country like Nigeria, with immense potentials, there ought to be a vibrant national forum for a critical discussion of research results and a proper documentation of accepted works that have been duly reviewed. The annual Colloquium and Congress of NAMP serve the former, while the latter is catered for by the Journal of NAMP. The fact that we are able to do these two things every year is measure of the growth and stability we have strived to realise over the years.

It is my sincere hope that we will continue to be in a position to produce at least one volume of the Journal of NAMP every year.

Prof. G. Babaji

January – March Issue, 2021.