

# VITÆ

Mahouton Norbert Hounkonnou

July 19, 2026

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## 1 Home Address:

Sainte Rita, 07 B.P.: 0196  
Cotonou, Republic of Benin  
Mobile: (+229) 01 95 06 26 89; (+229) 0196 96 52 40

## 2 Professional Address:

University of Abomey-Calavi  
International Chair in Mathematical Physics and Applications  
(ICMPA - UNESCO Chair)  
072 B.P. 50 Cotonou, Republic of Benin  
Mobile: (+229) 01 95 06 26 89; 01 96 96 52 40; (+33) 6 15 42 49 15  
e-mail: norbert.houkonnou@cipma.uac.bj; houkonnou@yahoo.fr; houkonnou1@gmail.com.

## 3 Résumé

Docteur en sciences (1992) de l'Université catholique de Louvain (Belgique), Mahouton Norbert Houkonnou est professeur titulaire de sciences mathématiques à l'Université d'Abomey-Calavi, au Bénin. Ses travaux portent sur les mathématiques non commutatives et non linéaires, ainsi que sur les systèmes complexes. Il est auteur et critique d'ouvrages. Il est également membre et rédacteur associé de comités de rédaction de revues et d'ouvrages de renom en mathématiques, notamment dans les comités de rédaction de International Journal of Geometric Methods in Modern Physics (World Scientific), Afrika Matematika (Springer), Mathematics in Mind (Springer), Fields Cognitive Science Network et d'Peer Community In (PCI) Neuroscience. Il a publié plus de 200 articles majeurs de recherche dans des journaux abstractés et indexés de premier plan et dans des actes de conférences internationales dans les domaines des mathématiques, de

la physique mathématique et de la complexité. Il est professeur invité dans des universités africaines, asiatiques, européennes et nord-américaines. Avec ses pairs au niveau international, il a créé la Chaire Internationale en Physique Mathématique et Applications (CIPMA-Chaire UNESCO) de l'Université d'Abomey-Calavi où il a conçu des programmes multi-universitaires de master et de doctorat en mathématiques ayant des liens, des motivations ou des applications à la physique, et en physique en relation profonde avec les mathématiques. Les meilleurs étudiants africains de plus de 13 pays francophones et anglophones sont sélectionnés pour suivre ces programmes d'études supérieures. Ces programmes attirent des mathématiciens et physiciens mathématiciens de renom du monde entier, qui y viennent pour donner des cours et superviser les recherches des étudiants. Cela a considérablement accru la collaboration internationale avec les mathématiciens africains, asiatiques, américains, européens et indiens. La CIPMA-Chaire UNESCO accueille actuellement la série des conférences et écoles internationales sur les problèmes contemporains en physique mathématique, qui se tiennent, respectivement, tous les deux ans et chaque année depuis 1999 et 2005. Ces activités ont permis de constituer un important réseau de chercheurs rattachés à la CIPMA-Chaire UNESCO, bénéficiant des ressources disponibles en mathématiques et en physique mathématique en Afrique. Le professeur Hounkonnou a encadré 38 doctorants et 41 étudiants en master de divers pays et continents, dont la Belgique, le Bénin, le Burkina Faso, le Burundi, le Cameroun, le Ghana, la République démocratique du Congo, le Niger, le Nigéria, le Sénégal, le Togo et la Zambie. Le professeur Hounkonnou a reçu de nombreuses distinctions pour l'excellence de ses travaux, notamment le prix Yang-Hui 2023 *pour ses contributions majeures aux algèbres quantiques déformées*, la médaille Tate 2023 de l'American Institute of Physics *pour son leadership dans la construction et le maintien d'une communauté transnationale africaine durable de recherche et d'enseignement en physique mathématique, en particulier les conférences et écoles COPROMAPH et les réseaux internationaux de niveau académique*, le prix C. N. R. Rao pour la recherche scientifique 2016 de l'Académie mondiale des sciences *pour ses travaux incisifs sur les mathématiques non commutatives et non linéaires et ses contributions à un enseignement des mathématiques de classe mondiale*, le prix du président de l'Université des sciences de Tokyo en 2015 et le prix de l'Académie des sciences du tiers monde (TWAS) en 1996. Le professeur Hounkonnou est président du comité d'experts indépendants (CEI) de l'Académie mondiale des sciences (TWAS) chargé d'examiner les candidatures aux prix TWAS dans le domaine des sciences mathématiques (2024 –). Il a été membre du Conseil scientifique de l'UNESCO pour le Programme international des sciences fondamentales (IBSP), membre du comité du prix NANUM 2014 du Congrès international des mathématiciens (ICM 2014) en tant qu'examineur pour la région Afrique, et membre du groupe de travail du Partenariat interacadémique

sur l'exploitation de la science, de l'ingénierie et de la médecine pour relever les défis de l'Afrique, etc. Il a été professeur de recherche de TWAS en Zambie, président de la Commission de l'Académie africaine des sciences pour l'Olympiade panafricaine des sciences (2014), président du Comité de sélection des membres de l'Académie africaine des sciences pour les sciences mathématiques (2013 - aujourd'hui). Le professeur Hounkonnou est coprésident du réseau des académies africaines, européennes et méditerranéennes pour l'enseignement des sciences (AEMASE III), président du Réseau des académies africaines des sciences (NASAC), ancien président de l'Académie nationale des sciences, arts et lettres du Bénin (ANSALB, 2015-2020). Il est membre du Comité consultatif du partenariat interacadémique et du Programme d'enseignement des sciences (IAP SEP), de l'Association internationale de physique mathématique, de la société américaine de mathématiques (American Mathematical Society), de la société mathématique de Londres (London Mathematical Society), de la société pour les mathématiques industrielles et appliquées (Society for Industrial and Applied Mathematics (SIAM)), de l'Académie des sciences d'Afrique du Sud (ASSAf), de l'Académie Hassan II des sciences et de la technologie, Maroc, de l'Académie africaine des sciences (AAS), de l'Académie mondiale des sciences (TWAS), du Conseil scientifique du Centre international de mathématiques pures et appliquées (CIMPA de 2017 à 2024), du Comité scientifique du Centre international de formation avancée et de recherche en physique (CIFRA, Magurele-Bucarest, Roumanie), ainsi que d'autres sociétés scientifiques et savantes. Il est président de la Commission permanente de l'ANSALB Education et Ethique, membre de l'organe présidentiel Délégation au Contrôle et à l'Ethique dans l'Enseignement supérieur au Bénin. Il est Docteur Honoris Causa de l'Université Toulouse III Paul Sabatier, France, et représentant pour l'Afrique de la Commission pour les pays en développement (CDC) de l'Union mathématique internationale (UMI). En mai 2023, il a été élu président des membres associés de l'Organisation de Coopération du Sud (OCS) (2023-2024). Il est chevalier de l'Ordre national du Bénin.

## 4 Summary

Dr.Sc in 1992 from Catholic University of Louvain in Belgium, Mahouton Norbert Hounkonnou is a full Professor of Mathematical sciences at the University of Abomey-Calavi, Benin Republic. His works deal with noncommutative and nonlinear mathematics, and complex systems. He authors and reviews books. Further, he serves as member and associate editor of editorial boards for renowned journals and books in mathematics and mathematical physics, including the Editorial Boards of International Journal of Geometric Methods in Modern Physics, (World Scientific), Afrika Matematika, (Springer), Mathematics in Mind, (Springer), Fields Cognitive Science Network, the Peer Community In (PCI) Neu-

rosience, etc. He published over 200 main research papers in outstanding ISI-ranked peer reviewed journals and international conference proceedings in the fields of mathematics, mathematical physics, theoretical physics and complexity. He is a visiting professor at African, Asian, European and North American Universities. Together with his peers at the international level, he founded the International Chair in Mathematical Physics and Applications (ICMPA -UNESCO Chair) of the University of Abomey-Calavi where he created multi-university master degree and PhD programmes in mathematics with connections, motivations or applications to physics, and in physics with important relations to mathematics. The best African students from over 13 French and English-speaking countries are selected to follow these graduate programs, which attract prominent and leading mathematicians and mathematical physicists worldwide who come to give lectures and supervise student's research, what has substantially increased international collaboration with African, Asian, American, European and Indian mathematicians. The ICMPA-UNESCO Chair presently hosts the international conference and school series on Contemporary Problems in Mathematical Physics, which are held every two years and each year since 1999 and 2005, respectively. These activities have led to a significant network of researchers connected with the ICMPA-UNESCO Chair, that benefits from the resources available in mathematics and mathematical physics in Africa. Professor Hounkonnou supervised 38 PhD and 41 M. Sc. students from various countries and continents, including Belgium, Benin, Burkina-Faso, Burundi, Cameroun, Democratic Republic of Congo, Niger, Nigeria, Senegal, Togo, Zambia, etc. Professor Hounkonnou was awarded a series of recognitions for the excellence of his work such as the 2023 Yang-Hui Award *for seminal contributions to the deformed quantum algebras*, the American Institute of Physics 2023 Tate Medal *for leadership in building and maintaining an enduring transnational African mathematical physics research and education community, in particular the COPROMAPH conferences and schools and Academy level international networks*, the 2016 World Academy of Sciences C. N. R. Rao Prize for Scientific Research *for his incisive work on noncommutative and nonlinear mathematics and his contributions to world-class mathematics education*, the Tokyo University of Science President Award in 2015, and the Prize of the Third World Academy of Sciences (TWAS) in 1996. Professor Hounkonnou is the Chair of The World Academy of Sciences (TWAS) Independent Expert Committee (IEC) for the review of 'TWAS Awards' candidates in the field of Mathematical Sciences (2024 –). He was a member of UNESCO Scientific Board for International Basic Sciences Programme (IBSP), NANUM 2014 Award Committee Member of the International Congress of Mathematicians (ICM 2014) as reviewer for region Africa, and member of the InterAcademy Partnership working group on *Harnessing Science, Engineering and Medicine to Address Africa's Challenges*, etc. He was TWAS research Professor in Zam-

bia, the chair of the African Academy of Sciences Commission on Pan-African Sciences Olympiad (2014), chair of the African Academy of Sciences Membership Advisory Committee (MAC) in Mathematical Sciences (2013 – present). Professor Hounkonnou is the co-chair of the network of African, European and Mediterranean Academies for Science Education (AEMASE III), the President of the Network of African Science Academies (NASAC), former President of the Benin National Academy of Sciences, Arts and Letters (ANSALB, 2015-2020). His membership extends to InterAcademy Partnership Advisory Committee and Science Education Programme (IAP SEP), the International Association of Mathematical Physics, American Mathematical Society, London Mathematical Society, Society for Industrial and Applied Mathematics (SIAM), Academy of Sciences, Arts, Cultures of Africa and African Diasporas (ASCAD), Côte d’Ivoire, Academy of Science of South Africa (ASSAf), Hassan II Academy of Sciences and Technology, Morocco, African Academy of Sciences (AAS), The World Academy of Sciences (TWAS), Scientific Council of the Centre International de Mathématiques Pures et Appliquées (CIMPA), Scientific Committee of the International Centre for Advanced Training and Research in Physics (CIFRA, Magurele-Bucharest, Romania), as well as other scientific and learned societies. He is the President of the ANSALB Permanent Commission *Education and Ethics*, member of the Presidential Body *Delegation for Control and Ethics in Higher Education* in Benin. He is Doctor Honoris Causa of the University Toulouse III Paul Sabatier, France, and representative for Africa of the International Mathematical Union (IMU) Commission for Developing Countries (CDC). In May 2023, he was elected Chair of the Associate Members of the Organisation of the Southern Cooperation (OSC) (2023-2024). He is a Knight of the Benin National Order.

## 5 Education

- **List**

3. D. Sc. *summa cum laude* in Mathematics & Physics, Catholic University of Louvain, Belgium, 1992.
2. Diplôme d’Etudes Approfondies (DEA), valedictorian (graduated top of his class), University of Perpignan, France, 1989.
1. Master of Sciences (M.Sc.) *summa cum laude*, valedictorian, Polytechnic Institute of Kharkov, Ukraine (ex USSR), 1984.

## 6 Professional Experience:

### 6.1 Regular positions

- List

6.- 2001 - present: Chair Holder, International Chair in Mathematical Physics and Applications (ICMPA-UNESCO Chair)

University of Abomey-Calavi

072 B.P.: 50, Cotonou

Republic of Benin.

5.- 2000 - present: Full University Professor of Mathematics & Physics, (Professeur Titulaire de Mathématiques & Physique des Universités, Conseil Africain et Malgache pour l'Enseignement Supérieur (C.A.M.E.S.) 2000)

University of Abomey-Calavi

B.P.: 525, Cotonou

Republic of Benin.

4.- 1996 - 2000: Professor *with rank A*, (Maitre de Conférences, C.A.M.E.S. 1996, *avec la côte A*)

Institute of Mathematics and Physical Sciences

University of Abomey-Calavi

B.P.: 613, Porto - Novo

Republic of Benin.

3.- 1994 - 1996: Associate Professor *with rank A*, (Maitre-Assistant, C.A.M.E.S. 1994 *avec la côte A*)

Institute of Mathematics and Physical Sciences

University of Abomey-Calavi

B.P.: 613, Porto - Novo

Republic of Benin.

2.- 1992 - 1993: Research Fellow, Free University of Brussels, BRUSSELS, Belgium.

1.- 1984 - 1989: Assistant Lecturer

University of Abomey-Calavi

B.P.: 526, Cotonou

Republic of Benin.

## 6.2 Relevant visiting appointments

- List

53.-. Visiting Professor

Faculté des Sciences et Ingénierie - UMR 5566 Laboratoire des Etudes en Géophysique et Océanographie Spatiales, Université Toulouse III Paul Sabatier, France, May 2019.

52.-. Visiting Professor

Fundamental Mathematics Research Group, Department of Mathematics and Computer Science, University of Antwerp, Belgium, April 2019.

51.-. TWAS Research Professor

University of Zambia, Lusaka, December, 2018.

50.-. Visiting Professor

Department of Mathematics, Tokyo University of Sciences, Tokyo, Japan, April–May, 2015.

49.-. TWAS Research Professor

University of Zambia, Lusaka, January, 2015.

48.-. Visiting Professor

Centre International Bernoulli, Ecole Polytechnique Fédérale de Lausanne, Switzerland, October–December, 2014.

47.-. TWAS Research Professor

University of Zambia, Lusaka, November - December, 2013.

46.-. Visiting Professor

Centre International Bernoulli, Ecole Polytechnique Fédérale de Lausanne, Switzerland, September, 2013.

45.-. TWAS Research Professor

University of Zambia, Lusaka, June and December, 2012.

44.-. Université Paris 7 (France)

Professeur invité, November, 2011.

43.-. TWAS Research Professor

University of Zambia, Lusaka, September, 2011.



- 42.-. African Institute for Mathematical Sciences (AIMS Senegal) Launch, September 3th and 8th, 2011.
- 41.-. Université Paul Sabatier de Toulouse  
Professeur invité, June, 2010.
- 40.-. TWAS Research Professor  
University of Zambia, Lusaka, April, 2010.
- 39.-. Université Paul Sabatier de Toulouse  
Professeur invité, June, 2009.
- 38.-. Université Paris Sud XI  
Professeur invité, June, 2009.
- 37.-. Université de Lomé (Togo)  
Professeur invité, November, 2008.
- 36.-. Université Paris Sud XI  
Centre Scientifique d'Orsay (France)  
Professeur invité, June, 2008.
- 35.-. TWAS Research Professor  
University of Zambia, Lusaka, April, 2008.
- 34.-. Fourth meeting of the Scientific Board of the International Basic Sciences Programme (IBSP), Room XIV, UNESCO Headquarters, 1 rue Miollis, Paris, 17 - 18 Mars 2008.
- 33.-. Third meeting of the Scientific Board of the International Basic Sciences Programme (IBSP), Room XIV, UNESCO Headquarters, 1 rue Miollis, Paris, March 19 - March 20, 2007.
- 32.-. Université de Lomé (Togo)  
Professeur invité, November, 2006.
- 31.-. African Union First African Congress of Scientists and Policy Makers  
Alexandria, Egypt, October 27 - October 29, 2006.
- 30.-. Université de Perpignan (France)  
Professeur invité, July, 2006.
- 29.-. Université Paris Sud XI  
Centre Scientifique d'Orsay (France)

Professeur invité, March, 2006.

28.-. Second meeting of the Scientific Board of the International Basic Sciences Programme (IBSP), Room XIV, UNESCO Headquarters, 1 rue Miollis, Paris, March 20 - March 21, 2006.

27.-. Université Paris Sud XI

Centre Scientifique d'Orsay (France)

Professeur invité, July, 2005.

26.-. Université du Bénin (Togo)

Professeur invité, March - April, 2005.

25.-. International UNESCO/ICSU/TWAS Symposium on the follow-up to the World Conference on Science (WCS), Harnessing science for society: further partnerships Venice, Italy, March 2- March 5, 2005.

24.-. First meeting of the Scientific Board of the International Basic Sciences Programme, Room VII, UNESCO Headquarters, 7 Place de Fontenoy, Paris, 30-31 January 2005.

23.-. Department of Mathematics and Statistics

Concordia University (Canada)

Visiting Professor, May, 2004.

22.-. Center for Mathematical Sciences Research

(Rutgers, The State University of New Jersey, USA)

Visiting Professor, April, 2004.

21.-. 2nd Meeting of the Ad Hoc Committee of Experts for the International Basic Sciences Programme (IBSP), Venice, Italy, 9-10 January 2004.

20.-. African Institute for Mathematical Sciences (AIMS) Launch, September 18th and 19th, 2003.

19.-. Université Paris Sud XI

Centre Scientifique d'Orsay (France)

Professeur invité, June, 2003.

18.-. Meeting of the Ad Hoc Committee of Experts for the International Basic Sciences Programme (IBSP), Room XIV, UNESCO Headquarters, 1 rue Miollis, Paris 19-20 May 2003.

17.-. Université Paris Sud XI

Centre Scientifique d'Orsay (France)

Professeur invité, June - July, September - October, 2002.

16. European Physical Society General Meeting, Trends in Physics, Budapest, Hungary, 26 - 30 August, 2002.

15.-. Université Paris Sud XI

Centre Scientifique d'Orsay (France)

Professeur invité, June, September, 2001.

14.-. Université du Bénin (Togo)

Professeur invité, April, 2001.

13.-. Université Paris Sud XI

Centre Scientifique d'Orsay (France)

Professeur invité, June, 2000.

12.-. Université du Bénin (Togo)

Professeur invité, April, 2000.

11.-. Université Paris Sud XI

Centre Scientifique d'Orsay (France)

Professeur invité, June, 1999.

10.-. Catholic University of Louvain, Belgium

Professeur invité, September, 1999.

9.-. Département de Statistique

Facultés Agronomiques de Gembloux, Belgium

Professeur invité, March, 1999.

8.-. Catholic University of Louvain, Belgium

Professeur invité, July - October, 1998.

7.-. Centre de Physique Théorique (CPT),

CNRS - Luminy, 13288 Marseille Cedex 9, France

Professeur invité, October, 1998.

6.-. Laboratoire de Cosmologie et Relativité Générale

Université de Paris VII, Jussieu (France)

Professeur invité, October, 1998.

5.-. Université Paris Sud XI

Centre Scientifique d'Orsay (France)

Professeur invité, October, 1998.

4.-. Pennsylvania State University, Department of Mathematics

University Park, PA 16802

Visiting Professor, August, 1997.

3.-. Centre de Recherches Mathématiques de Montréal, Montreal, Canada

Visiting Professor, August-September, 1997.

2.-. Catholic University of Louvain, Belgium

Professeur invité, November - December, 1995.

1.-. Catholic University of Louvain, Belgium

Professeur invité, November - December, 1994.

## 7 Other Professional Experience

### 7.1 Master and PhD thesis supervised

#### 7.1.1 Main PhD thesis supervised

- List

38.-. Francis Atta Howard (from Ghana), (with Kangni Kinvi), PhD in Mathematical Physics, (*On some Clebsch-Gordan coefficients of some semi-simple Lie groups: An application to spin particles*).

37.-. Bêm-Biéri Barthélémy Natta (from Benin), (with Vincent Lahoche and Dine Ousmane Samary), PhD 2023 in Theoretical Physics, (*Functional renormalization group aspects for discrete quantum gravity models*).

36.-. Mahougnon Justin Landalidji (from Benin), PhD 2023 in Mathematical Physics, (*Bi-Hamiltonian structures, recursion operators, and dynamical symmetry groups on deformed Poisson manifolds*).

35.-. Fridolin Melong (from Cameroon), PhD 2020 in Mathematics, (*Characterization of Witt, Witt  $n$ - algebras, Virasoro algebras, conformal Virasoro algebras and KdV equations from  $\mathcal{R}(p, q)$ - deformed quantum algebras*).

- 34.-. Gbêvèwou Damien Houndedji (from Benin), PhD 2019 in Mathematics, (*Antisymmetric and ternary associative infinitesimal (hom-)bialgebras and their representations*).
- 33.-. Mafoya Landry Dassoundo (from Benin), PhD 2019 in Mathematics, (*Flexible and anti-flexible algebras, bialgebras and their representations*).
- 32.-. Remi Cocou Avohou (from Benin), (with Dr Joseph Bengeloun), PhD 2015 in Mathematics, (*On Generalized Graphs, polynomial invariants and applications*).
- 31.- Sama Arjika (from Niger), PhD 2015 in Mathematical Physics, (*Deformed Heisenberg algebras, coherent states and special functions*).
- 30.- Olusegun Patrick Adebisi Adegbuyi (from Nigeria), (with Prof. Ganiyu Ishola Lawal), PhD 2014 in Mathematical Physics, (*Modelling of the effect of casting dynamics on the mechanical properties of Al 6063*).
- 29.-. Yélognissé Casimir Da-Allada (from Benin), (with Prof. Yves Du-Penhoat), PhD 2013 in Physical Oceanography and Applications (*Salinité océanique de surface dans l'océan Atlantique tropical : variabilités saisonnières à interannuelles*).
- 28.-. Joseph Désiré Bukweli Kyemba (from Democratic Republic of Congo), PhD 2012 in Mathematical Physics and Functional Analysis, (*Quantum Deformed Algebras: Coherent States and Special Functions*).
- 27.-. Ngidioni Guillaume Komawila (from Democratic Republic of Congo), (with Prof. Pascal Lambrechts), PhD 2012 in Mathematical Physics, (*Euler series, Stirling numbers and the growth of the homology of the space of long links*).
- 26.-.Iyela Daddy Balondo (from Democratic Republic of Congo), (with Prof. Jan Govaerts), PhD 2012 in Mathematical Physics, (*Mécanique quantique supersymétrique des systèmes quantiques intégrables à une et deux dimensions, et déformation de Klauder-Daubechies*).
- 25.-. Kibamba Nestor Anzola (from Democratic Republic of Congo), (with Prof. Pierre Bieliavsky), PhD 2012 in Mathematical Physics, (*Détermination au niveau de l'analyse fonctionnelle d'un opérateur d'entrelacement entre les quantifications géométriques de Kirillov-Weyl et Bargmann-Fock*).
- 24.-. Dine Ousmane Samary (from Benin), PhD 2011 in Mathematical Physics, (*Noncommutative Solvable Models in Quantum and Field Theories*).
- 23.-. Isiaka Aremua (from Togo), PhD 2011 in Mathematical Physics, (*Matrix Vector Coherent States for Multilevel Particles*).
- 22.-. Pascal Alain Dkengne Sielenou (from Cameroon), PhD 2011 in Mathematics, (*Analytical Methods for Solving Nonlinear Models and Variational Problems*).

- 21.-. Comlan Houna (from Benin), PhD 2009 in Mathematical Physics, (*Nonlinear Généralisation des polynômes orthogonaux et les équations de Laguerre-Freud*).
- 20.-. Elvis Ngompe Nkouankam (from Cameroon), PhD 2009 in Mathematical Physics, (*Nonlinear Deformed Systems and Algebras: Generalized Coherent States and Quantum Special Functions*).
- 19.-. Aderibigbe Anjorin (from Nigeria), PhD 2007 in Mathematics, (*Symmetries of Heun's Operators, Factorization and Basic Sets of Chebychev Polynomials*).
- 18.-. Mahaman Kabir Mahaman (from Niger), PhD 2007 in Mathematics, (*Symmetry Analysis of Nonlinear Hydro - Biological Models*).
- 17.-. Joseph Ben Geloun (from Senegal) (with Prof. J. Govaerts), PhD 2007 in Mathematical Physics, (*Nonlinear Models in Noncommutative Geometry: Part. I. Nonlinear Solvable Models: Deformed Spin-Orbit and Landau Operators Part II. Symmetries and Nonlocal Aspects of Noncommutative Field Theory (a Non-perturbative Study)*).
- 16.-. Komi Sodoga (from Togo), PhD 2005 in Mathematical Physics, (*Sturm-Liouville Differential Operator: Factorization and Solvable Potentials*).
- 15.-. Laure Gouba (from Burkina-Faso) (with Prof. J. Govaerts), PhD 2005 in Mathematical Physics, (*Théories de Jauge Abéliennes Scalaire et Spinorielle à  $1 + 1$  Dimensions*).
- 14.-. Gaston Edah (from Benin) (with Prof. B. Piraux), PhD 2004 in Theoretical Physics, (*Description du double continuum de deux électrons émis dans le champ du noyau*).
- 13.-. Antonin Danvidé Kanfon (from Benin) (with Prof. D. Lambert), PhD 2003 in Theoretical Physics, (*Description de l'inflation et de la quintessence à l'aide du couplage  $F$ -harmonique et gravitation*).
- 12.-. Gabriel Yves Hugues Avoisevou (from Benin) (with Prof. J. Govaerts), PhD 2002 in Theoretical Physics, (*Problèmes de Quantification Canonique: 1. Modèles Solubles en Mécanique Quantique Relativiste: Cas des Interactions  $\delta$  - sphériques; 2. Théories de Yang-Mills et Etats Physiques en  $0 + 1$  et  $1 + 1$  Dimensions*).
- 11.-. Luwaka Mutuba (from Democratic Republic of Congo), PhD 2002 in Theoretical Physics, (*Approche Sturmiennne dans l'Ionisation Multiphotonique de l'Atome d'Hélium*).
- 10.-. Eugene Ezin, (from Benin), (with Prof. M. Marimaro), PhD 2001 in Mathematical Physics, (*Neural networks and neural fuzzy systems for speech applications*).

- 9.-. Bernardin Ahounou, (from Benin), (with L. Paquet), PhD 2001 in Mathematics, (*Equations de boussinesq en présence de thermocapilarité avec conditions aux limites non homogènes*).
- 8.-. Jean El-Bachir Mendy, (from Senegal), (with Prof. Jan Govaerts), PhD 2001 in Mathematical Physics, (*Etudes des processus quantiques neutrinos-leptons au-delà du modèle standard*).
- 7.-. Yébéni Kouagou (from Benin) (with Prof. J-P Antoine), PhD 2000 in Mathematical Physics, (*Transformations en ondelettes discrètes: une approche utilisant des pseudodilatations*).
- 6.-. Amétépé Hohoueto (from Benin) (with Prof. J-P Antoine), PhD 1999 in Mathematical Physics, (*On some discrete relativistic frames*).
- 5.-. Gerard Lagmago (from Cameroon) (with Kwato Njock), PhD 1999 in Theoretical Physics, (*Semi-classical approaches to dipole radial integral for nonhydrogenic ions and two active electron system in intensive Laser field*).
- 4.-. John Tatini Titantah (from Cameroon) (with Prof. J. P. Ryckaert), PhD 1999 in Theoretical Physics, (*A Quantum Statistical Model of a Three-Dimensional Linear Rigid Rotator in a Bath of Oscillators And Computer Simulation of Polymer Solutions*).
- 3.-. Mama Foupouagnigni (from Cameroon) (with Prof. A. Ronveaux), PhD 1998 in Mathematical Physics, (*Laguerre-Hahn Orthogonal Polynomials with respect to the Hahn Operator: Fourth-order Difference Equation for the  $r$ th Associated and the Laguerre-Freud Equations for the Recurrence Coefficients*).
- 2.-. Mathias Hounkpe (from Benin) (with Prof. Juma Shabani), PhD 1997 in Mathematical Physics, (*Théorie de la Diffusion par des Potentiels  $\delta$ -Sphériques de Première et Deuxième Espèces en Mécanique Quantique Non-Relativiste*).
- 1.-. Patrick Navez (from Belgium), PhD 1995 in Theoretical Physics, (*Relaxation Diélectrique et Biréfringence Electrique de Rotateurs Linéaires Rigides en Milieux Thermalisés*).

### 7.1.2 Main Master thesis supervised

- **List**

- 41.- Benedict Asare (from Ghana) (with Cocou Avohou), MSc. 2022 *Real-world Application of Graph Theory: The Greedy Algorithm*.

- 40.- Stephen Paapa Kweku Oweredu Assefuah (from Ghana) (with Cocou Avohou), MSc. 2022 *Real-world Application of Graph Theory: The Greedy Algorithm, Real-world Application of Graph Theory: The Timetabling Problem*
- 39.- Huggues B. Dègbedji (from Benin), M. Sc 2022 *(Hom-) f-generalized Witt algebras*).
- 38.- Mahoulomé Sylvain Tozé (from Benin) ( with Prof Villévo Adanhounmé), M. Sc 2022 *(Contrôle optimal de la propagation des colorants dans un cours d'eau)*.
- 37.- Nounassou Vincent Hounkpé (from Benin) ( with Prof Villévo Adanhounmé), M. Sc 2022 *(Optimal control of a  $(R,L)$  loop by electric potential)*.
- 36.- Mahougbé Morel Senahoun (from Benin) ( with Dr Nicodème M. Atchadé, Didier Noukpo), M. Sc 2019 *(Impact des échanges commerciaux entre le Bénin et le Nigéria sur la croissance économique du Bénin: Approche par un modèle stochastique)*.
- 35.- Toundé Inés Onésime Denahou (from Benin) ( with Prof Adam Krzyzak, Dr Gilbert Honnouvo), M. Sc 2019 *(Continuous frames in genera Hilbert spaces and applications)*.
- 34.- Géoffroy K. M. Dato (from Benin) ( with Dr Nicodème M. Atchadé, Dr Bonaventure Omondi Aman), M. Sc 2019 *(Etude statistique des facteurs influençant la propagation de la maladie du bunchy top du bananier (BBTD) au Bénin : Cas des communes de Adjara, Akpro-Missérété, Dangbo, Sakété, Athiéme et Houéyogbé)*.
- 33.- Elias Akpo Houkoun (from Benin), M. Sc 2019 *(Analyse fonctionnelle des séries spatio-temporelles de la pluviométrie au Bénin de 1951 é 2010)*.
- 32.- Sitouvi Stéphan Robert Houndessahou (from Benin) (with Dr Cocou Rémi Avohou, Dr Dine Ousmane Samary), M. Sc 2019 *(Polynomial caractérisation of hypergraphs : Main definitions and relevant properties)*.
- 31.- Mahougnon Robinson Degbegni (from Benin) (with Dr Bienvenue Kouwaye), M. Sc 2018 *(Dynamique pluviométrique au Bénin: Variabilité et ruptures)*.
- 30.- Yves Morel Sokadjo (from Benin) (with Prof Waliou Amoussa Hounkpatin, Dr Bienvenue Kouwaye), M. Sc 2018 *(Modeling of six month children stunting prevalence reduction: Case of Dangbo N@C INITATIVE (Bénin))*.
- 29.- Momboladji Fabrice Aristide Balogoun (from Benin), M. Sc. 2018 *(Determinant factors and modelling of youth emigration from Benin)*.
- 28.- Cyrille Essossolim Haliya (from Togo), M. Sc. 2018 *(Général second-order  $q$ -différence equation)*.



- 27.- Mermoz M. D. Sagbohan (from Benin) (with Dr Gilles Cottrell), M. Sc. 2017 (*Pouvoir prédictif du niveau du hla-g de la mère sur la susceptibilité au paludisme chez l'enfant entre 0 et 2 ans*).
- 26.- Bém-Biéri Barthélémy Natta (from Benin) (with Dr Antonin Kanfon ), M. Sc. 2016 (*Conséquence cosmologiques des perturbations linéaires du champ gravitationnel du couplage non minimal du type John et Georges*).
- 25.- Finagnon Gaétan Djossou (from Benin) (with Dr Gaston EDAH), M. Sc. 2016 (*Propagation d'une impulsion laser dans la fibre optique*).
- 24.- Jonas Fanou (Benin), M. Sc. 2018 ( *$n$ -Poisson manifold, tripe Poisson algebras and their characterization*).
- 23.- Cyrille Kakpo (Benin), M.Sc. 2018 (*Landau problem in noncommutative phase space*).
- 22.- Mahougnon Justin Landalidji (Benin), M.Sc. 2017 (*Recursion operator in the noncommutative Minkowski phase space*).
- 21.- Landry Dassoundo (Benin), M.Sc. 2014 (*On left-symmetric bialgebras and some left-symmetric algebras of the 4-dimensional Heisenberg Lie algebra*).
- 20.- Damien Houndedji (Benin), M.Sc. 2014 (*Double constructions of Heisenberg Frobenius algebras, Connes cocycles and their duality*).
- 19.- Ilwale Kwalombota (Zambia), M. Sc. 2014 (*Anyons and deformed Lie algebras*).
- 18.- Arjika Sama (Niger), M.Sc. 2011 (*Polynômes  $q$ -classiques: tableaux d'Askey et de Nikiforov-Uvarov*).
- 17.- Aremua Isiaka (Togo), M. Sc. 2007 (*Etats Cohérents Vectoriels des Systèmes Hamiltoniens non-Dégénérés*).
- 16.- Dine Ousmane Samary (Benin), M. Sc. 2007 (*Tenseur énergie-impulsion en théorie scalaire sur des espaces-temps non commutatifs*).
- 15.- Komi Sodoga (from Togo), M.S. 2002 (*Paramétrisation du Problème Quantique à  $N$  Corps en Physique Moléculaire: Cas de la Molécule HCN*).
- 14.- Mohamed Naciri (from Morocco) , M.S. 1999 (*Création de Particules Dans un Espace à  $d+1$ , ( $d=3,2,1$ ), Dimensions*).
- 13.- Gaston G. Edah (from Benin), M.S. 1999 (*Décomposition de l'Opérateur de Green en Polynomes de Faber*).
- 12.- Antonin D. Kanfon (from Benin), M.S. 1999 (*Contribution Théorique à l'Etude des Neutrinos Massifs*).

- 11.-. Ezinvi Baloitcha (from Benin), M.S. 1998 (*Paramétrisation Hypersphérique du Problème à  $n$  Corps en Mécanique Quantique Non - Relativiste*).
- 10.-. Gabriel Avossevou (from Benin), M.S. 1998 (*Théorie de la Diffusion par des potentiels  $\delta$ -Sphériques de Deuxième Espèce en Mécanique Quantique Relativiste*).
- 9.-. Alfred Vyabandi (from Burundi), M.S. 1998 (*Théorie de la Diffusion par des potentiels  $\delta$ -Sphériques de Première Espèce en Mécanique Quantique Relativiste*).
- 8.-. Mutamba Panga (from Democratic Republic of Congo), M.S. 1998 (*Déformation du Groupe de Poincaré*).
- 7.-. Jean El Bachir Mendy (from Senegal), M.S. 1998 (*Théorie du Neutrino en Présence de Champs Extérieurs*).
- 6.-. John Tatini Titantah (from Cameroon), M.S. 1995 (*Dielectric Properties of a Rigid Rotator in 3D: A Quantum Statistical Mechanics Approach*).
- 5.-. Mazita Mombi (from Democratic Republic of Congo), M.S. 1995 (*Potentiels Solubles pour l'Equation Differentielle de Heun et ses Formes Confluentes*).
- 4.-. Luwaka Mutuba (from Democratic Republic of Congo) (with Prof. Jean Pestieau), M.S. 1995 (*Description du Charmonium et du Bottomonium par des Potentiels Logarithmique et Exponentiel*).
- 3.-. Mama Foupouagnigni (from Cameroon) (with Prof. André Ronveaux), M.S. 1995 (*Equations de Laguerre-Freud: Cas des Polynômes Orthogonaux Semi-Classiques de Classe 2*).
- 2.-. Lionel Hohouéto (from Benin), M.S. 1995 (*Les Etats Cohérents du Groupe de Poincaré à Masse non Nulle*).
- 1.-. Kamta Gérard Lagmago (from Cameroon) (with Dr Njoc'k Kwato), M.S. 1995 (*Contribution à l'Approximation Semi-Classique Dans le Calcul des Intégrales Radiales Dipolaires*).

## 7.2 Referee of papers submitted to (most frequently):

- **Journals of Mathematics and Mathematical Physics:**

- 23.-. Arabian Journal of Mathematics
- 22.-. International Journal of Geometric Methods in Modern Physics (also *Associate Editor*)(2023-present)
- 21.-. Reviews in Mathematical Physics
- 20.-. Journal of Contemporary Mathematical Analysis (2019-present)

- 19.-. Integral Transforms And Special Functions (2017–present)
  - 18.-. Journal of Mathematical Analysis and Applications (2016–present)
  - 17.-. Journal of Mathematical Inequalities (2016–present)
  - 16.-. Report on Mathematical Physics (2016–present)
  - 15.-. Differential equations and Applications (2014 - present)
  - 14.-. Geometry, Integrability and Quantization (also *Associate Editor*)(2013-present)
  - 13.-. Arab Journal of Mathematical Sciences (Elsevier)
  - 12.-. Open Journal of Differential Equations
  - 11.-. Electronic Journal of Differential Equations (2011 - present)
  - 10.-. Afrika Matematika (also *Associate Editor*) (2009 - present)
  - 9.-. Communications in Mathematical Analysis (also *Associate Editor*) (2009 - present)
  - 8.-. African Diaspora Journal of Mathematics (also *Associate Editor*) (2009 - present)
  - 7.-. Advances in Mathematical Physics (also *Member of the Editorial Board*) (2008 - 2020)
  - 6.-. Applied Mathematics Letters (2008 - present)
  - 5.-. Journal of Mathematical Physics (2008 - present)
  - 4.-. Computers and Mathematics with Applications (2007 - present)
  - 3.-. Journal of Physics A: Mathematical and Theoretical (1997 - present)
  - 2.-. Applied Mathematics and Computations (2006 - present)
  - 1.-. Journal of Computational and Applied Mathematics (2006 - present)
- Reviewer for Mathematical Reviews
  - Reviewer for Zentralblatt MATH
  - **Journals of Physics:**
    - 14.-. European Journal of Physics
    - 13.-. Results in Physics
    - 12.-. Modern Physics Letters
    - 11.-. Journal of Physics Communications (2018 - present)
    - 10.-. Astrophysics and Space Science (2018 - present)

- 9.-. Chinese Physics B (CPB) (2011 - present)
- 8.-. Chinese Physics Letters (CPL) (2011 - present)
- 7.-. International Journal of Theoretical Physics (2010 - present)
- 6.-. Canadian Journal of Physics (2010 - present)
- 5.-. Physica Scripta (2006 - present)
- 4.-. Journal of Physics: Condensed Matter (2000 - present)
- 3.-. Journal of Optics A: Pure and Applied Optics (1999 - present)
- 2.-. Journal of Physics B: Atomic and Molecular Physics (1997 - present)
- 1.-. Journal of Molecular Liquids (1995 - present).

### 7.3 Main books reviews and author:

- List

18. M. Mitrović, M. N. Hounkonnou, *Algebra without Borders – Classical and Constructive Semigroups and Applications*, Mathematics in Mind, Springer, 2025.  
<https://link.springer.com/book/10.1007/978-3-031-86477-3>
17. (M. N. Hounkonnou, M. Mitrović, M. Abbas and M. Khan), *Algebra without Borders - Classical and Constructive Nonassociative Algebraic Structures: Foundations and Applications*, CaCNAS:FA, Springer STEAM-H: Science, Technology, Engineering, Agriculture, Mathematics & Health, 2023, (XXXVII, 570) Hardcover ISBN978 - 3 - 031 - 39333 - 4, eBook ISBN978 - 3 - 031 - 39334 - 1, <https://doi.org/10.1007/978-3-031-39334-1> <https://link.springer.com/book/9783031393334>
16. (M. N. Hounkonnou, D. Martinovic, M. Mitrović, and P. Pattison), *Mathematics For Social Sciences and Arts—Algebraic Modeling*, in the book series Mathematics in Mind, Springer, February 2024, Hardcover ISBN978-3-031-37791-4, Softcover ISBN978-3-031-37794-5, eBook ISBN978-3-031-37792-1; <https://link.springer.com/book/9783031377914>
15. (M. N. Hounkonnou and M. Mitrović), *Mathematics for human flourishing in the time of COVID-19 and post COVID 19*, De Gruyter, ISBN 978–3–11–073862–9 <https://www.degruyter.com/document/doi/10.1515/9783110734119/html#contents>
- 14.-. *Proceedings of the Sixth and Seventh International Workshops on Contemporary Problems in Mathematical Physics, the Eighth International School, and the 2012 African Mathematical School*, editors: Jan Govaerts and M. Norbert Hounkonnou, (ICMPA - UNESCO Chair Publishing, Benin, (2014)).

- 13.-.(M. N. Hounkonnou, S. T. Ali, G. A. Goldin, R. Kerner, K. B. Sinha, and A. Yoshioka) Lead Guest Editor of a Special Issue of Advances in Mathematical Physics, (2010) on *Nonlinear and Noncommutative Mathematics: New Developments and Applications in Quantum Physics*.
- 12.-. *Classical and Quantum Orthogonal Polynomials in One Variable*, Mourad E. H. Ismail, (Encyclopedia of Mathematics and its Applications 98, vol. 3. University Press, Cambridge (2009)). xviii+708 pages. Paperback, ISBN 978-0-521-14347-9.
- 11.-. *Numerical Analysis*, Mahouton Norbert Hounkonnou, (ICMPA Publishing, Cotonou, (2009)).
- 10.-. *Proceedings of the Fifth International Workshop on Contemporary Problems in Mathematical Physics*, editors: Jan Govaerts and M. Norbert Hounkonnou, (ICMPA - UNESCO Chair Publishing, Benin, (2008)).
- 9.-. *Proceedings of the Fourth International Workshop on Contemporary Problems in Mathematical Physics*, editors: Jan Govaerts, M. Norbert Hounkonnou, Alfred Z. Msezane, (World Scientific Publishing, Singapore, (2006)).
- 8.-. *Proceedings of the Third International Workshop on Contemporary Problems in Mathematical Physics*, editors: Jan Govaerts, M. Norbert Hounkonnou, Alfred Z. Msezane, (World Scientific Publishing, Singapore, (2004)).
- 7.-. *Exercises in Quantum Mechanics, A Self-Contained Book of Questions and Answers*, David Atkinson, Mahouton Norbert Hounkonnou and Porter Wear Johnson, (Rinton Press, Princeton, USA (2003)).
- 6.-. *Eléments de Physique Mathématique*, Mahouton Norbert Hounkonnou (URPT Lectures/IMSP, Benin, (2003)).
- 5.-. *Proceedings of the Second International Workshop on Contemporary Problems in Mathematical Physics*, editors: Jan Govaerts, M. Norbert Hounkonnou, Alfred Z. Msezane, (World Scientific Publishing, Singapore, (2002)).
- 4.-. *Quantum Mechanics, A Self-Contained Course*, David Atkinson and Mahouton Norbert Hounkonnou, (Rinton Press, Princeton, USA, (2001)).
- 3.-. *Proceedings of the First International Workshop on Contemporary Problems in Mathematical Physics*, editors: Jan Govaerts, M. Norbert Hounkonnou, William A. Lester, Jr., (World Scientific Publishing, Singapore, (2000)).
- 2.-. *Quantum Mechanics, An Introduction*  
Theoretical Physics 1, W. Greiner, Berlin, Springer - Verlag, 347 pages, (1989) in "Revue des questions Scientifiques", (1991).

1.-. *Quantum Mechanics, Symmetries*,

Theoretical Physics 2, W. Greiner and B. Muller, Berlin, Springer - Verlag, 368 pages, (1989) in "Revue des questions Scientifiques", (1991).

## 7.4 Service to the university community

- **List**

-.Member of the Presidential Body *Delegation for Control and Ethics in Higher Education* in Benin, (2023–present).

-.Director of the Doctoral School in Mathematical Physics and Applications at the University of Abomey-Calavi, (2004-2021)

-.Chair of the Master of Science Degree and Doctoral Programmes in Mathematical Physics of the Material Universe at the University of Abomey-Calavi, 2004- present.

-.Co-chair of the Master of Science degree in Physical Oceanography and Applications, Common to both the University of Abomey-Calavi (Benin) and Toulouse University Paul Sabatier (France) (2009 - present)

-.Member of the University Council for Sciences (1994 - 2021).

-.Member of the Pedagogical Council of the Faculty of Sciences and Technology, University of Abomey-Calavi (2000 - )

-.Member of the University Sectorial Committee for Sciences and Technology (1994 - 2021).

-.Chairman of the Theoretical Physics PhD program of the Institute of Mathematics and Physical Sciences (1994 - 2008).

-.Coordinator for Scientific Research and International Relations at the Institute of Mathematics and Physical Sciences (1995 - 2006).

-.Head of the Theoretical Physics Research Unit at the Institute of Mathematics and Physical Sciences (IMSP) (1993 - 2006).

-.Coordinator for Belgian Cooperation with the Institute of Mathematics and Physical Sciences (IMSP) (1993 - 2002).

-.Member of the University Committee for the Cooperation with Belgian Universities (1997 - 2013).

-. (Benin) University of Abomey-Calavi Coordinator for Cooperation with the University Paris Sud XI (1994 - 2018).

-(Benin) University of Abomey-Calavi Coordinator for Cooperation with University of Perpignan (1996 - 2016).

## 7.5 Organization of conferences

- List

24.- The 33rd/35th International Colloquium on Group Theoretical Methods in Physics (ICGTMP, Group33/35), Cotonou, Benin, July 15–19, 2024.

23.- International conference *Constructive mathematics: foundations and practice CM: FP 2023* in memory of Errett Bishop (1928-1983): celebrating the 95th anniversary of his birth as well as the 55th anniversary of the publication of his seminal book *Foundations of Constructive Analysis (FCA)*: <http://cmfp2023.masfak.ni.ac.rs/>

22.- International scientific conference *Algebra without borders - Classical and constructive nonassociative algebraic structures: foundations and applications, CaC-NAS: FA 2021*, 30 of June - 2 of July 2021, Niš, Serbia: <http://cacnas.masfak.ni.ac.rs/>

21.- International scientific conference *Mathematics for social sciences and arts - algebraic modeling, MS<sup>2</sup>A2M2021*, 24-26 of May 2021, Niš, Serbia: <http://mathsocart.masfak.ni.ac.rs/>

20.- Webinar on *Mathematics for human flourishing in the time of CoviD - 19 and post CoviD-19*, 21. October 2020, Niš, Serbia: [http://camfmen.masfak.ni.ac.rs/ Webinar – Covid. html](http://camfmen.masfak.ni.ac.rs/Webinar_Covid.html)

19.- The Nineth International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 31 - November 6, 2015, Chair of organizing committee

20.- The Tenth International School on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 24 - October 30, 2015, Chair of organizing committee

19.- The Eighth International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, November 2 - November 8, 2013, Chair of organizing committee

18.- The Nineth International School on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 26 - November 1, 2013, Chair of organizing committee

17.- The Eighth International School on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 20 - November 2, 2012, Chair of organizing committee

- 16.- The Seventh International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 29 - November 4, 2011, Chair of organizing committee
- 15.- The Seventh International School on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 22 - October 28, 2011, Chair of organizing committee
- 14.- The Sixth International School on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 23 - November 5, 2010, Chair of organizing committee
- 13.- The Sixth International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 31 - November 6, 2009, Chair of organizing committee
- 12.- The Fifth International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 27 - November 2, 2007, Chair of organizing committee
- 11.- The Fourth International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 1 - November 4, 2005, Chair of organizing committee
- 10.- The Third International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, November 1 - November 7, 2003, Chair of organizing committee
- 9.- ICMPA Summer School on Operator Analysis in Hilbert Spaces, Cotonou, Benin, 01 - 06 September, 2003, Chair of organizing committee
- 8.- URPT/IMSP Summer School on Operator Analysis in Hilbert Spaces, Porto-Novo, Benin, 05 - 10 August, 2002, Chair of organizing committee
- 7.- The Second International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 28 - November 2, 2001, Chair of organizing committee
- 6.- 8th International Seminar of Inter-African Group for Geometry, analysis and applications (GIRAGA VIII), Cotonou, Benin, December 2 - 9, 2000, co-organizer committee.
- 5.- The First International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 31 - November 5, 1999, Chair of organizing committee



- 4.- IMSP Annual Scientific day, July 11, 1997, Chief organizer.
- 3.- 6th International Seminar of Inter-African Group for Geometry, analysis and applications (GIRAGA VI), Lokossa, Benin, December 9 - 18, 1996, Chair of organizing committee.
- 2.- IMSP Annual Scientific day, July 11, 1996, Chief organizer.
- 1.- Mini International Seminar of Inter-African Group for Geometry, analysis and applications (Mini GIRAGA) on Dirac Operators, Cotonou, Benin, May, 1994, co-organizer.

## 8 Professional Awards and Honors

### 8.1 Professional awards

- **List**

- .- 2023 Yang-Hui Award for *seminal contributions to the deformed quantum algebras*.
- .- American Institute of Physics (AIP) 2023 Tate Medal for *leadership in building and maintaining an enduring transnational African mathematical physics research and education community, in particular the COPROMAPH conferences and schools and Academy level international networks*.
- .- Doctor Honoris Causa, University III-Paul Sabatier, Toulouse, France, (21 June 2022)
- .- 2016 C. N. R. Rao Prize for Scientific Research received for *incisive work on noncommutative and nonlinear mathematics and contributions to world-class mathematics education* on 14 November 2016, on the occasion of The World Academy of Sciences (TWAS) for the advancement of science in developing countries, 27th General Meeting in Kigali, Rwanda.
- .- 2015 Tokyo University of Science President Award, April 27th, 2015.
- .- Knight of the Benin National Order (Chevalier de l'Ordre National du Bénin), March 6, 2009.
- .- Prize of Third World Academy of Sciences (TWAS), 1996.
- .- Solvay International Institute of Physics and Chemistry Fellowship, January, February and March, 1993.
- .- Free University of Brussels Fellowship, 1993.
- .- van Buren University Foundation (Belgium) Fellowship, 1992.

## 8.2 Membership of science academies

- **List**

- .- Permanent Foreign Member of the Academy of Sciences, Arts, Cultures of Africa and African Diasporas (ASCAD), (2025 - present)
- .- Associate member of the Académie Hassan II des Sciences et Techniques du Maroc, (2022 - present)
- .- Honorary Foreign Associate of Academy of Science of South Africa (ASSaf) (2021 - present)
- .- President of the Network of African Science Academies (NASAC) (2019-present).
- .- InterAcademy Partnership regional network board member (2019-present)
- .- Member of the Global Council (GC) of InterAcademy Partnership Science Education Programme (IAP SEP) (2019-present).
- .- Founder Member of Benin National Academy of Sciences, Letters and Arts.
- .- Member of African Academy of Sciences (AAS), (2005 - present).
- .- Member of The World Academy of Sciences (TWAS) for the advancement of science in developing countries (ex Academy of Sciences for Developing World (TWAS)), (2004 - present).
- .- Member of New York Academy of Sciences, (1994 - ).

## 8.3 Membership of other learned societies

- **List**

- .- Member of American Physical Society (APS), (1998 - 2002; 2024 –present).
- .- Member of International Association of Mathematical Physics, (2004 - present).
- .- Member of London Mathematical Society (LMS), (2018 - present).
- .- Regular Member of Society for Industrial and Applied Mathematics (SIAM), (2018 - present).
- .- Member of American Mathematical Society (AMS), (2004 - present).

## 8.4 Membership of editorial boards of leading journals and books

- **List**

- .- (Member of Editorial Board) Mathematics in Mind, Springer.

- .- (Member of the editorial board) Fields Cognitive Science Network.
- .- (Member of the editorial board) Peer Community In (PCI) Neuroscience.
- .- (Associate Editor) International Journal of Geometric Methods in Modern Physics.
- .- (Member of the editorial board) Reports on Mathematical Physics.
- .- (Associate Editor) Geometry, Integrability and Quantization.
- .- (Associate Editor) Afrika Matematika.
- .- (Associate Editor) Communications in Mathematical Analysis.
- .- (Associate Editor) African Diaspora Journal of Mathematics.

## 8.5 Other main professional honors/leadership

### • List

- .- Co-chair of the Scientific Committee for the 2023 International Conference on Mathematical Analysis, Applications and Computational Simulation (2023 ICMAACS), November 22-26, 2023, Shanghai, China.
- .- Chair of the Selection Committee of the 2023 ICMAACS Best Paper Presentation Award.
- .- Chair of the Selection Committee of the 2023 Qin-Jiu-Shao Prize.
- .- Member of the Selection Committee of the 2023 Zu-Chong-Zhi Medal.
- .- Chair of the Conference of Associate Members of the Organisation of Educational Cooperation (OEC), Addis-Ababa, Ethiopia, May 19th, 2023.
- .- Member of the International Panel for the Review of the Faculty of Natural and Agricultural Sciences, University of Pretoria, South Africa, 24–28 October, 2022.
- .- President of Scientific Committee, African Forum on Science, Technology and Innovation (FARI) for a Competitive Economic Community of West African States (ECOWAS), Abuja, Nigeria, 17-22 October, 2022.
- .- Chair of the Organizing Committee of the International Colloquium on Group Theoretical Methods in Physics (Group 33/35), 15–19 July 2024 (to be held for the first time in Africa (Benin) in 2024).
- .- Member elected representative for Africa of the International Mathematical Union Commission for developing countries (IMU CDC) (2023 - 2026).
- .- International panel member for the evaluation of the African Institute of Mathematical Sciences (AIMS) (23 February 2022 - 13 May 2022)

- .- Member of the Scientific Committee of the International Centre for Advanced Training and Research in Physics (CIFRA, Magurele-Bucharest, Romania) (2019 - present).
- .- Member of the Scientific Council of the Centre International de Mathématiques Pures et Appliquées (CIMPA)
- .- International Conference with a Contributed volume *Mathematical Structures and Applications*, In honor of Mahouton Norbert Hounkonnou, Editors: Toka Diagana and Bourama Toni (2018)©Springer.
- .- Member of the international panel for evaluating the performance of the Centre of Excellence for Mathematical and Statistical Sciences (MaSS CoE), University of the Witwatersrand, South Africa, from 18 to 20 September 2018, covering the 5-year period from 1 April 2013 to 30 December 2017. The goal was to enhance the pursuit of research excellence and networking while actively increasing capacity development by exploiting the competitive advantage vested in outstanding researchers.
- .- Member of Education Relief Foundation's (ERF) Consultative Expert Working Group (CEWG), Geneva, Switzerland, (2017-present).
- .- Co-chair of the Network of African, European and Mediterranean Academies of Sciences for Science Education (AEMASE), (2015 - present).
- .- Chair of African Academy of Sciences Commission on Pan-African Sciences Olympiad (2014 - present).
- .- Chair of African Academy of Sciences Membership Advisory Committee (MAC) on Mathematical Sciences (2013 - present).
- .- President of Benin National Academy of Sciences, Arts and Letters (2015-2020).
- .- NANUM 2014 Award Committee Member of the International Congress of Mathematicians (ICM 2014) as Reviewer for Region Africa.
- .- Member of Comité de Réflexion Stratégique sur les Systèmes d'Information (CORSSI) de l'Institut de Recherche pour le Développement (IRD, France) (2011-2016).
- .- Member of Comité d'Orientation de l'Agence Inter-Etablissements de Recherche pour le Développement (AIRD, France) (2011 - 2013).
- .- External Examiner for (2010, 2011, ..., 2018) Academic Year in the School of Natural Sciences, University of Zambia.
- .- Chair of African Academy of Sciences Membership Advisory Committee on Mathematical Sciences, Informatics, Physics and Astronomy (2012-2013).

- .- Member of the Network STAFAV (Statistiques pour l’Afrique Francophone et Applications au Vivant).
- .- Member of TWAS Membership Advisory Committee (MAC) in Physics (2009 - 2022).
- .- TWAS Research Professor, University of Zambia, Lusaka, Zambia, (2007 - 2018).
- .- Member of the Advisory Committee for the Workshop on Geometry Methods in Physics, Białowieża, Poland (2002 - present).
- .- Member of UNESCO Scientific Board for International Basic Sciences Programme (IBSP), (2004 - 2007).
- .- Member of UNESCO Ad-Hoc Committee of Experts for International Basic Sciences Programme (IBSP), (2003- 2004).
- .- President and Holder of the International Chair in Mathematical Physics and Applications (ICMPA) issued from the Second International Workshop on Contemporary Problems in Mathematical Physics (COPROMAPH2), Cotonou, Benin, October 28 - November 2, 2001.
- .- 6th International Seminar of Inter-African Group for Geometry, analysis and applications (GIRAGA VI), Lokossa, Benin, December 9 - 18, 1996, Visiting Lecturer.
- .- Belgian National Science Foundation (FNRS), Campus de la Plaine-Chaville I, Avenue Maistriau 15, 7000 Mons, May 6, 1992, Visiting Lecturer.
- .- Marquis Who’s Who in the World.

## 9 Main Invited Addresses and Lecture Series

- **List**

- 97. The 6th International Conference on Integrable Systems and Nonlinear Dynamics Conference (ISND 2025), Yaroslavl, Russia, September 22–26, 2025, with a talk on *Conformal inversion in a Minkowski phase space: recursion operator and quadratic algebra*.
- 67. International Conference Quantum Africa 7 (QA7) 22-26 September 2025, Kenitra–Morocco with a talk on *Nonlinear vector coherent states for an electron-phonon model in an  $f$ –deformed oscillator algebra: main properties and quantization of phase space observables*.
- 95. The 5th International Conference on Integrable Systems and Nonlinear Dynamics (ISND 2024), October 7–11, 2024, Yaroslavl, Russia, with a talk on *Non-*

*commutative  $n$ -torus in a magnetic field: volume invariance, scalar curvature and quantum stochastic equation.*

94. Workshop on Geometric Methods in Physics, 01–06 July 2024, Białowieża, Poland, with a talk on *Invariance of the scalar curvature for the noncommutative 2-torus equipped with a perturbed complex structure.*

93. The 4th Integrable Systems and Nonlinear Dynamics (ISND 2023), September 25–29, 2023, Yaroslavl, Russia, with a talk on *Geometry and probability on the noncommutative 2-torus in a magnetic field.*

92. XL Workshop on Geometric Methods in Physics, 02 – 08 July 2023, Białowieża, Poland, with a talk on *Discrete mechanics in non-uniform time  $\alpha$ -lattices.*

91. Satellite International Conference of Nonlinear Dynamics & Integrability, Yaroslavl, Russia, June 27 to July 1, 2022, with a talk on *Kepler dynamics on a conformable Poisson manifold.*

90. World Science Forum (WSF2022), Cape Town, South Africa, 6–9 December, 2022: chair of the WSF side event titled *"Policies for decarbonising transport with social justice in Europe and Africa- priorities and lessons learned"*.

89. Special Guest and Panelist in the 12th meeting of the Inter Parliamentary Union (IPU) High-Level Advisory Group on Countering Terrorism and Violent Extremism (HLAG) at the 145th IPU Assembly, 11–15 October 2022, Kigali, Rwanda, and "Addressing environmental degradation and its effects on the proliferation of terrorism" held on 13 October 2022, Kigali Convention Center, with a talk on *Education in the Sahel and its impact on the proliferation of terrorism.*

88. "Science, Ethics and Human Development " international conference, Quy Nhom, Vietnam, 13th - 15th September 2022, focused on two topics of great actuality related to the Covid-19 pandemic:

- a roundtable, specifically devoted to the lessons learnt by the different countries on the Covid-19 pandemic, with focus on the impact of the interaction between scientists and policy makers on the quality and effectiveness of the policies adopted by the governments to protect the population;

- a dialogue, on the relations between science and policymaking, with particular focus on ethics matters and on the relation between scientists, politicians and parliaments during the different phases of the Covid-19 pandemic.

87. The 34th International Colloquium on Group Theoretical Methods in Physics (Group34), Strasbourg University, France, from 18-22 July 2022, with a talk on

*Newton mechanics, Galilean relativity, and special relativity in  $\alpha$ -deformed binary operation setting.*

86. 3<sup>rd</sup> International Conference on Integrable systems & nonlinear dynamics, Yaroslavl, Russia, October 04–08, 2021, with a talk on *Hamiltonian Dynamics in Alcubierre and Gödel metrics: Recursion operators and underlying master symmetries.*

85. International conference on Classical & Constructive Semigroups and Applications, ACaCS 2021, September 6-8, 2021, Niš, Serbia <http://acacs2020.masfak.ni.ac.rs/>

84. International conference on Classical and Constructive Nonassociative Algebraic Structures: Foundations and Applications, CaCNAS:FA 2021, In the memory of Nebojša Stevanović (1962-2009), June 30 – July 2, 2021, Niš, Serbia <http://cacnas.masfak.ni.ac.rs/>

83. International conference on Mathematics for Social Sciences and Arts – Algebraic Modeling, MS2A2M 2021, May 24-26, 2021, Niš, Serbia <http://mathsocart.masfak.ni.ac.rs/>

82. International conference on Mathematics for Human Flourishing in the time of Covid-19 and Post Covid-19, October 21, 2020, Niš, Serbia [http://camfmnen.masfak.ni.ac.rs/ Webinar\\_Covid.html](http://camfmnen.masfak.ni.ac.rs/Webinar_Covid.html)

81. Laboratoire d'Etudes en Géophysique et Océanographie Spatiales (Legos), Université Toulouse III Paul Sabatier, May 24th, 2019, talk given at the Africa Day in Legos (Journée Africaine au Legos) on *Travelling wave and soliton solutions of the Kawahara equation.*

80. Fundamental Mathematics Research Group, Department of Mathematics and Computer Science, University of Antwerp, Belgium, April 2019, Lectures given to M. Sc. degree students on *Integrable Hamiltonian Systems.*

79. Fundamental Mathematics Research Group, Department of Mathematics and Computer Science, University of Antwerp, Belgium, April 24th, 2019, Colloquium on *Generalized deformed quantum differential calculus and integration.*

78. Fundamental Mathematics Research Group, Department of Mathematics and Computer Science, University of Antwerp, Belgium, April 24th, 2019, talk given on *Quasi-bi-Hamiltonian structures of the Kepler problem in a deformed phase space.*

77. Seminar, Maths Lab., University of Zambia, Lusaka, Zambia, December 7th, 2018, *Zinbiel algebras and bialgebras: main properties and related algebraic structures.*

76. The 32nd International Colloquium on Group Theoretical Methods in Physics (Group 32), Prague, July 09-13, 2018, with a talk on *Zinbiel algebras and bialgebras: main properties and related algebraic structures*.
75. XXXVII Workshop on Geometric Methods in Physics, Bialowieza, Poland, July 1st - July 7th, 2018, with a talk on *Hamiltonian dynamics of the Kepler problem in a deformed phase space*.
74. Centre of Excellence for Mathematical and Statistical Sciences, University of the Witwatersrand, South Africa, September 8th, 2017, with a talk on *On a generalization of quantum algebras: coherent states maps, special functions and differential calculus*.
73. School of Mathematics, University of the Witwatersrand, Johannesburg, South Africa September 7th, 2017, with a talk on *Modular structures and Hilbert-Schmidt operators in noncommutative quantum mechanics*.
72. XXXVI Workshop on Geometric Methods in Physics, Bialowieza, Poland, July 2nd - July 8th, 2017, with a talk on *Recursion operator in a noncommutative Minkowski phase space*.
71. XXXV Workshop on Geometric Methods in Physics, Bialowieza, Poland, July 4th - July 9th, 2016, with a talk on *On construction of the recursion operator in the Minkowski metric using a modified Poisson bracket*.
70. Southern Africa Mathematical Sciences Association (SAMSA) 2015 Conference in Windhoek, Namibia, November – November 27, 2015, keynote speaker on *Generalization of Virasoro algebra : left-symmetry, geometry and related nonlinear systems*.
69. XXXIII Workshop on Geometric Methods in Physics, Bialowieza, Poland, June 28 - July 4, 2015, with a talk on *Center-symmetric algebras and bialgebras: relevant properties and consequences*.
68. 2015 Tokyo University of Science (TUS) President Award talk, Tokyo University of Science, Tokyo, Japan, April 27th, 2015, on *Generalized Virasoro algebra: left-symmetry and related algebraic and hydrodynamic properties*.
67. Tokyo University of Science, Tokyo, Japan, April – May 2015, Lectures on *Left symmetry in Physics and Geometry: Definition and algebraic consequences*.
66. Geometry and Dynamics Seminar, Chair of Geometric Analysis, EPFL, Lausanne, November 26, 2014: *Generalized Virasoro algebra and left symmetry in geometry and physics*.



65. Centre de Recherches Mathématiques (CRM, Montreal, Canada) - Instituto de Ciencias Matematicas (ICMAT, Madrid, Spain) Workshop on Exceptional Orthogonal Polynomials and Exact Solutions in Mathematical Physics, Segovia, Spain, September 7 - September 12, 2014, with a talk on *Transformations of degenerate hypergeometric equations into degenerate Heun equations*.
64. The 30th International Colloquium on Group Theoretical Methods in Physics (Group 30), Ghent, Belgium, July 14 - July 18, 2014, with a talk on *On some differential transformations of hypergeometric equations*.
63. University Paul Sabatier Toulouse (France), July 7, 2014, with a talk on *Some exact solutions of a nonlinear Boussinesq system of equations*.
62. XXXII Workshop on Geometric Methods in Physics, Bialowieza, Poland, June 29 - July 5, 2014, with a talk on *Supersymmetric vector coherent states for systems with Zeeman coupling and spin-orbit interactions*.
61. Hamiltonian Dynamics Seminar, Chair of Geometric Analysis, EPFL, Lausanne, September 25, 2013, with a talk on *On a formal 3-ary star product for deforming a Poisson algebra*.
60. XXXII Workshop on Geometric Methods in Physics, Bialowieza, Poland, June 30 - July 7, 2013, with a talk on *Npoints star product: construction and integral representation*.
59. XXIX International Colloquium on Group-Theoretical Methods in Physics, Chern Institute of Mathematics, Tianjin, China, 20 - 26, 2012, with a talk on *On generalized oscillator algebras and their associated coherent states*.
58. XXXI Workshop on Geometric Methods in Physics Bialowiejzia, Poland, June 24 - 30, 2012, with a talk on  $\Theta(x, p)$ -*deformation quantization of harmonic oscillator on a 2D-phase space*
- 57.-. Pan African University Stakeholder Curriculum Validation Workshop, Addis Ababa, November 14 - November 18, 2011.
56. TWAS Research Professor, University of Zambia, Lusaka, September 08 - October 04t, 2011, with a talk on *Algebraic Theory of Differential Equations*.
55. XXX Workshop on Geometric Methods in Physics, Bialowieza, Poland, June 25 - July 2, 2011, with a talk on *Deformation quantization of harmonic oscillator in a general noncommutative phase space: Spectrum in relevant representations*.
54. XXIX Workshop on Geometric Methods in Physics, Bialowieza, Poland, June 27 - July 3, 2010, with a talk on *Conservation laws for under determined systems of differential equations*.

53. XXVIII Workshop on Geometric Methods in Physics, Bialowieza, Poland, June 28 - July 5, 2009, with a talk on *An algebraic method of factorization of ordinary differential operators*.

52. XXVII Workshop on Geometric Methods in Physics, Bialowieza, Poland, June 28 - July 5, 2008, with a talk on *Noncommutative Complex Grosse-Wulkenhaar Model*.

51. TWAS Research Professor, University of Zambia, Lusaka, April 04 - May 1st, 2008:

Lectures on *Group Theory and Representations*.

50. XXVI Workshop on Geometric Methods in Physics, Bialowieza, Poland, July 1- July 7, 2007, with a talk on *Noncommutative Noether Theorem*.

49. Séminaire de Physique Mathématique, Université Paris Sud XI, April 21, 2007, with a talk on *Improved Energy Momentum Tensors in Noncommutative Field Theory*.

48. The Fourth International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 1 - November 4, 2005, with a talk on *Laguerre - Freud Equations for the Recurrence Coefficients of Some Discrete Semi-Classical Orthogonal Polynomials of Class Two*.

47. The Fourth International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 1 - November 4, 2005, with a talk on *Basic Set of Polynomials: General Overview*.

46. The Fourth International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 1 - November 4, 2005, with a talk on *The Potential Group Method for Sturm - Liouville Equations*

45. The Fourth International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 1 - November 4, 2005, with a talk on *Analytical Solutions of a Generalized Nonlinear Reaction - Diffusion Equation*.

44. The Fourth International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 1 - November 4, 2005, with a talk on *New Approach to the Characterization of the Atmosphere by Determination of Original Analytical Relations Representing a Backscattered Signal LIDAR*.

43. The Fourth International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 1 - November 4, 2005, with a talk on *Bosonization of the Schwinger Model by a Noncommutative Chiral Boson*.

42. The Fourth International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 1 - November 4, 2005, with a talk on *Nonabelian Global Symmetries Realisation in Two Dimensional  $N$  Flavour Massless Schwinger Model*.
41. XXIV Workshop on Geometric Methods in Physics, Bialowieza, Poland, 25 June - 2 July, 2005, with a talk on *2-Dimensional Noncommutative Field Theory on the Light Cone*.
40. Séminaire du Laboratoire de Physique Mathématique, Centre de Recherches Mathématiques (CRM), Université de Montréal, May 11th, 2004, with a talk on *Recurrence Coefficients for the Generalized Charlier Semi-Classical Orthogonal Polynomials*.
39. Mathematical Physics Seminar, Center for Mathematical Sciences Research, (Rutgers, The State University of New Jersey, USA), April 8th, 2004, with a talk on *New Families of Orthogonal Polynomials*.
38. The Third International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, November 1 - November 7, 2003, with a talk on *Fermionisation of a Two-Dimensional Free Massless Complex Scalar Field*.
37. The Third International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, November 1 - November 7, 2003, with a talk on *Self-Adjoint Extensions of the Dirac Hamiltonian With a  $\delta$ -Sphere Interaction*.
36. The Third International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, November 1 - November 7, 2003, with a talk on *On Generalized Continuous  $D$  Semi-Classical Orthogonal Polynomials of Class One*.
35. The Third International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, November 1 - November 7, 2003, with a talk on *Nonlinear Recurrence Relations for Modified  $q$ -Discrete Hermite Orthogonal Polynomials*.
34. The Third International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, November 1 - November 7, 2003, with a talk on *Optical Parameter Determination of the Atmosphere From a LIDAR Signal by Hilbert Transforms. Attempt at Aerosol Characterization*.
33. XXI Workshop on Geometric Methods in Physics, Recent Developments in Quantization, Bialowieza, Poland, 29 June - 5 July, 2003, with a talk on *Supercoherent states for a model of Jaynes and Cummings in the strong coupling limit*.
32. EPS General Meeting, Trends in Physics, Budapest, Hungary, 26 - 30 August, 2002, with a talk on *Physics for Development in Sub-Saharan African Countries*.

31. URPT/IMSP Summer School on Operator Analysis in Hilbert Spaces, Porto-Novo, Benin, 05 - 10 August, 2002, with a talk on *Differential Operators in Mathematical Physics*.
30. Group24, XXIV International Colloquium on Group Theoretical Methods in Physics, Paris, 1 July 15 - 20, 2002, with a talk on *Spectral Properties of Landau Operator with  $\delta$ -cylinder interactions*.
29. Satellite Symposium to G24 - Groupe De Contact FNRS, Coherent States, Wavelets And Applications, Université catholique de Louvain, Belgium, July 10 - 12, 2002.
28. XXI Workshop on Geometric Methods in Physics, Recent Developments in Quantization, Bialowieza, Poland, 30 June - 06 July, 2002, with a talk on *von Neumann Quantization of Aharonov-Bohm operator with  $\delta$  interaction: scattering theory, spectral and resonance properties*.
27. The Second International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 28 - November 2, 2001, with a talk on *The Transformation of Polynomial Eigenfunctions of Linear Second-Order  $q$ -Difference Operators: A Special Case of  $q$ -Jacobi Polynomials*.
26. The Second International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 28 - November 2, 2001, with a talk on *On Generalized Continuous  $D$  Semi-Classical Hermite and Chebychev Orthogonal Polynomials of Class One*.
25. The Second International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 28 - November 2, 2001, with a talk on *On a Generalization of the Method by Barbaroux et al. for the Improvement on the Rate of decay of an Operator Resolvent*.
24. The First International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 31 - November 5, 1999, with a talk on *Sturmian Approach in Multiphoton Ionisations*.
23. The First International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 31 - November 5, 1999, with a talk on *Laguerre-Freud Equations For Semi-classical Operators*.
22. The First International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 31 - November 5, 1999, with a talk on *Analytically Solvable Models of Relativistic  $\delta'$ -Interactions With First Type Boundary Conditions*.

21. The First International Workshop on Contemporary Problems in Mathematical Physics, Cotonou, Benin, October 31 - November 5, 1999, with a talk on *The von Neumann Theory of Self-Adjoint Extensions of Symmetric Linear Operators: Applications to Dirac and Dirac-Coulomb Hamiltonians*.
20. Séminaire de Physique Mathématique sur *"Polynômes Orthogonaux Semi-Classiques à Poids Discrets: Cas des Charlier Généralisés"*, Centre de Physique Théorique, CNRS - Luminy, 13288 Marseille Cedex 9, France, 14 Oct. 1998.
19. VIIIèmes Journées Scientifiques de l'Université du Bénin, Lomé (Togo), 11-15 Mai 1998, with a talk on *"Discrete Semi-Classical Orthogonal Polynomials: Generalized Charlier"*.
18. VIIIèmes Journées Scientifiques de l'Université du Bénin, Lomé (Togo), 11-15 Mai 1998, with a talk on *"Laguerre-Freud Equations For the Semi-Classical Orthogonal Polynomials on Conics"*.
17. VIIIèmes Journées Scientifiques de l'Université du Bénin, Lomé (Togo), 11-15 Mai 1998, with a talk on *"Théorie du Neutrino en Présence de Contraintes Extérieures"*.
16. VIIIèmes Journées Scientifiques de l'Université du Bénin, Lomé (Togo), 11-15 Mai 1998, with a talk on *"Théorie de la Diffusion par des potentiels  $\delta$ -Sphériques de Deuxième Espèce: Cas Relativiste"*.
15. VIIIèmes Journées Scientifiques de l'Université du Bénin, Lomé (Togo), 11-15 Mai 1998, with a talk on *"Théorie de la Diffusion par des potentiels  $\delta$ -Sphériques de Première Espèce: Cas Relativiste"*.
14. VIIIèmes Journées Scientifiques de l'Université du Bénin, Lomé (Togo), 11-15 Mai 1998, with a talk on *"Paramétrisation Hypersphérique du Problème à  $n$  Corps en Mécanique Quantique Non - Relativiste"*.
13. 6th International Seminar of Inter-African Group for Geometry, analysis and applications (GIRAGA VI), Lokossa, Benin, December 9 - 18, 1996, Visiting Lecturer on *"On Coherent States and Mathematical Wavelets."*
12. Seminar on Resolution Methods for Partial Differential Equations With applications in Geometry and Physics, IMSP, Benin, January 8, 1996, with a talk on *"Contribution à l'Approximation Semi-Classique dans le Calcul des Intégrales Radiales Dipolaires"*.
11. Seminar on Resolution Methods for Partial Differential Equations With applications in Geometry and Physics, IMSP, Benin, January 8, 1996, with a talk on *"On the Dielectric Molecular Relaxation Master Equation in a Thermalized Medium"*.

10. Seminar on Resolution Methods for Partial Differential Equations With applications in Geometry and Physics, IMSP, Benin, January 8, 1996, with a talk on *"On the Heun Form Solutions of the Schrodinger Equation"*.
9. Journée de Simulation en Physique Statistique, E.S.P.C., Paris (France), organized by G. Ciccotti, D. Levesque, M. Meyer, M. Mareschal and V. Pontikis in the framework of the XIIième Rencontre Internationale de Physique Statistique de Paris (France), with a talk on *"Comportement Rhéologique d'un Fluide de Molécules Anisotropes dans Divers Ecoulements: Aspects Linéaires et Nonlinéaires"*, January 29, 1992.
8. Cours de Troisième Cycle Interuniversitaire: Chimie Physique Moléculaire - Questions Spéciales, Belgian National Science Foundation (FNRS), Mons - Hainaut, on *"Molecular Dynamics Simulations of Equilibrium and Non-Equilibrium Phenomena"*, May 6, 1992.
7. Workshop on "New Directions in Polymer Simulations", Centre Européen de Calcul Atomique Moléculaire (CECAM), Paris (France), with a talk on *"Rheology of Rigid Rods in Couette and Elongational Flows"*, July 20 - 31, 1992.
6. Catholic University of Louvain (Belgium), with a talk on *"Aspects Microscopiques et Macroscopiques des Fluides Polyatomiques Soumis á des Ecoulements Homogènes et Stationnaires"*, July, 1991.
5. NATO ASI (Advanced Study Institute) on "Computer Simulations in Material Sciences: Interatomic Potentials, Techniques and Applications" organized by M. Meyer and V. Pontikis, Aussois (France), with a talk on *"Viscosity and Rheological Properties of Mono- and Diatomic Liquids by Molecular Dynamics"*, March 24 - April 4, 1991.
4. University of Liège - Sart Tilman, Belgium, Contact group "Atoms, Molecules and Radiation", Belgian National Science Foundation (FNRS), with a talk on *"Molecular Electric Birefringence"*, October 31, 1990.
3. Catholic University of Louvain, FYAM, Belgium, with a talk on *"Calcul du Taux d'Ionisation de l'Ion Multichargé  $Ar^{+8}$ "*, December, 1987.
2. National University of Benin, "Premières Journées de Sciences et Technologie", April 5 - April 11, 1984.
1. Kharkov, URSS, Scientific days of the Kharkov Society of Sciences and Technology, with a talk on *"Controllability Problems in Dynamical Systems: Mathematical Aspects"*, 1983.

## 10 Main Research Areas

Mathematical physics, noncommutative and nonlinear mathematics, integrable Hamiltonian systems, geometric methods in physics with special emphasis on the following keywords:

- Mathematical methods of quantum theory (MSC2010 classification: 81Qxx; 81Rxx; 81Sxx; 81Txx); quantization techniques; quantum algebras, representations, coherent states;
- Nonassociative rings, algebras, coalgebras and bialgebras and links to integrable systems (MSC2010 classification: 17Axx; 17Bxx; 16Txx);
- Classical and quantum hypergeometric functions (MSC2010 classification: 33Cxx and quantum analogs), quantum orthogonal polynomials and special functions;
- Operator theory;
- Theory of differential / difference equations: symmetry analysis, factorization, algebraic structures;
- Noncommutative field theories;
- N - body problems in:
  - Molecular physics: body fixed hyperspherical/polyspherical parametrization approach
  - Statistical mechanics of complex phenomena: classical and quantum formalisms;
- (Quasi-bi-)Hamiltonian systems (MSC2010 classification: 37K05, 37K10).

My works also deal with statistics applied to living, as well as mathematical methods in geosciences including physical oceanography.

## 11 List of main refereed research publications

- See full list of publications in:  
[www.researchgate.net/profile/Mahouton\\_Houkonnou/](http://www.researchgate.net/profile/Mahouton_Houkonnou/)  
212. (with R. C. Avohou), *On the handle slide operation and universality polynomial invariants for binary  $\Delta$ -matroids*, IJGMMP, [https:// doi.org / 10.1142 / S0219887825400432](https://doi.org/10.1142/S0219887825400432)

211. (with M. M. Akouetegan, I. Aremua), *Barut-Girardello coherent states for the isotonic oscillator*, IJGMMP, <https://doi.org/10.1142/S0219887825400547>
210. (with J. Landalidji), *Kepler dynamics on a  $\alpha$ -deformed Poisson manifold: Recursion operators and master symmetries*, IJGMMP, DOI: 10. 1142 / S 0219887825400468
209. (with F. Melong), *Generalized Rogers- Szego polynomials and identities: Part II* International Journal of Geometric Methods in Modern Physics Vol. 23, No. 6 (2026) 2640001 (26 pages) c© World Scientific Publishing Company DOI: 10. 1142 / S0219887826400013
208. (with S.L. Dongmo Tedo, C.O. Feulefack, F. Manfouo, R.M. Keumo Tsiaze, A.J. Fotue), *Energy level spectrum of polaron in metal halide perovskite pseudopotential quantum dot*, Physics Letters A 560 (2025) 130931, <https://doi.org/10.1016/j.physleta.2025.130931>
207. (with Akouetegan, Messan M.; Aremua, Isiaka; Sodoga, Komi; Mensah, Yao-gan), *Generalized hypergeometric coherent states for special functions: mathematical and physical properties*, J. Math. Phys. 66 (2025), no. 1, Paper No. 013504, 20 pp.
206. (with Olaiya Mathilde Adéoti, Aliou Diop & Romain Glèlè Kakai), *Bayesian flexible multilevel nonlinear models in infectious disease modeling using non - informative priors*, (2025) , Biostatistics & Epidemiology, 9:1, e2505290, DOI: 10.1080 / 24709360. 2025.2505290.
205. (with Akakpo, Yao Ihébami; Enakoutsu, Koffi; Assiamoua, Kofi V. S. ), *Development of a Fourier-Stieltjes transform using an induced representation on locally compact groups*, Afr. Mat. 35 (2024), no. 3, Paper No. 68, 15 pp.
204. *Discrete Mechanics in Nonuniform Time  $\alpha$ -Lattices*, Trends in Mathematics, Birkhäuser/Springer, Cham, (2024), 367–381. [https://doi.org/10.1007/978-3-031-62407-0\\_24](https://doi.org/10.1007/978-3-031-62407-0_24).
203. (with Fridolin Melong), *Geometry and probability on the noncommutative 2-torus in a magnetic field*, Teoret. Mat. Fiz. 220 (2024), no. 2, 377–395; translation in Theoret. and Math. Phys. 220 (2024), no. 2, 1385–1401.
202. (with F. Manfouo, O.C. Feulefack, R.M. Keumo Tsiaze and A.J. Fotue), *Bound Magneto-Acoustic Polaron in an Asymmetric Gaussian Confinement Potential Quantum Well*, Int J Theor Phys 63, 70 (2024); <https://doi.org/10.1007/s10773-024-05602-1>.
201. (with M. Mitrović), *Problematic of mathematics and social sciences and arts: a ubiquitous constructive interaction in algebraic modeling*, Math. Mind Springer,



- Cham, 2024, 3-29. ISBN: 978-3-031-37791-4; 978-3-031-37792-1.
200. (with M. Mitrović, P. Catarino), *Constructive semigroups with apartness - a state of the art*, Math. Mind Springer, Cham, 2024, 127-176. ISBN: 978-3-031-37791-4; 978-3-031-37792-1.
199. (with Fattoum Harrathi, Sami Mabrouk, and Sergei Silvestrov) *Construction and characterization of  $n$ -ary Hom-bialgebras and  $n$ -ary infinitesimal Hom-bialgebras*, Springer Proc. Math. Stat., 426 Springer, Cham, 2023, 399-428. ISBN: 978-3-031-32008-8; 978-3-031-32009-5.
198. (with Won S. Chung) (*Newton mechanics, Galilean relativity, and special relativity in  $\alpha$ -deformed binary operation setting*, SciPost Phys. Proc. 14, 024 (2023); doi:10.21468/SciPostPhysProc.14.024.
197. (with Gbeviewou Damien Houndedji), (*Hom-*)(co)associative ternary (Co) algebras and infinitesimal ternary (Hom-)bialgebras, STEAM-H: Sci. Technol. Eng. Agric. Math. Health Springer, Cham, 2023, 237–294. ISBN: 978-3-031-39333-4; 978-3-031-39334-1
196. (with B.Hugues Degbedji, Fridolin Melong and Melanija Mitrović), (*Hom-*)*-generalized Witt Algebras*, STEAM-H: Sci. Technol. Eng. Agric. Math. Health Springer, Cham, 2023, 331-377. ISBN: 978-3-031-39333-4; 978-3-031-39334-1
195. (with F. Melong), *Quantum polynomials from deformed quantum algebras: probability distributions, generating functions and difference equations*, Rev. Math. Phys. 35 (2023), no. 9, Paper No. 2350019, 58 pp.
- 194 (with R. C. Avohou, J. Ben Geloun), *Universality for polynomial invariants on ribbon graphs with flags*, Discrete Applied Mathematics, 1–17 (2023); doi: 10.1016 / j.dam. 2022. 11. 005.
193. (with K. Anani and R. Prudhomme), *An approximate analytical model for the frequency response of evaporating droplets under a mixed feeding regime*, Comptes Rendus, Mécanique, (in press) <https://doi.org/10.5802/crmeca.146>.
192. (with Villévo Adanhounmè and Melanija Mitrović), *Dynamics of COVID-19 pandemic: control problem and equilibrium stability characterization*, Mathematics for human flourishing in the time of COVID-19 and post COVID-19, Proceedings De Gruyter, ISBN 978–3–11–073862–9.  
<https://doi.org/10.1515/9783110734119-011>.
191. (with R. Glèlè Kakai, S. H. Honfo, H. B. Taboe), *Modelling COVID-19 dynamics in the sixteen west african countries*, Mathematics for human flourishing

in the time of COVID-19 and post COVID-19, Proceedings De Gruyter, ISBN 978–3–11–073862–9.

<https://doi.org/10.1515/9783110734119-009>

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