Kwame Nkrumah University of Science and Technology (KNUST), Department of Physics - Faculty Member:
https://webapps.knust.edu.gh/staff/dirsearch/profile/summary/0a0f4684a9cb.html
Mathematical & Computational Physics (MCP) Unit – Coordinator:
https://physics.knust.edu.gh/mcp/about-mcp
National Institute for Mathematical Sciences (NIMS – GH) - Research Fellow
InterMaths Network: RealMaths Consortium - Contact Person & Local Coordinator,
KNUST & NIMS Path: https://www.intermaths.eu/double-degrees/partners/kumasi
ORCID Id: http://orcid.org/0000-0003-0173-1238
ResearchGate: https://www.researchgate.net/profile/Henry-Martin-2
Academia: https://atmenson.academia.edu/HenryMartin
Scopus: https://www.scopus.com/authid/detail.uri?authorId=57219745243
Web of Science: https://www.webofscience.com/wos/author/record/3835636
Google Scholar: https://scholar.google.com/citations?user=Fhi7dUsAAAAJ&hl=en

Profile

Dr. Henry Martin is a Faculty Member at the Department of Physics, KNUST, the Coordinator of the Mathematical and Computational Physics (MCP) Unit and Local Coordinator for the Interdisciplinary Mathematics Network: RealMaths Consortium for both KNUST. Henry has been serving on several Ad-hoc and (Non) Statutory committees and boards in national and international settings. He is also a Mentor to fellows at the Central Leadership Program (CLP), Ghana. He has been an Erasmus Mundus Visiting Scholar at L'Aquila University (UAQ), Italy, a Visiting Fellow of the Institute of Pure and Applied Mathematics (IPAM), University of California (UCLA), Los Angeles, USA, a Visiting Fellow of the International Centre for Theoretical Physics (ICTP) and others.

Dr. Martin holds a PhD in Scientific Computing and Industrial Modelling, a Master's degree in Mathematical Engineering (Mathematical-Physics Modelling) and a BSc in Physics. He is a Mathematical and Computational Physicist interested in understanding and exploring most of the world's physical (real life) challenges faced using Digital Twin Techniques: MultiPhysics Modelling, MultiScale Modelling (Quantum to Continuum), Machine Learning and Statistical Analysis in areas such as Water systems, Hydrogeology, Climate, Renewable Energy and Materials. He has done substantial research work in the outlined areas, published in peer-reviewed journals, and has been serving as a reviewer for funding agencies and journals. He has also successfully supervised 7 MPhil, 3 MSc and 44 BSc Students and is currently supervising 3 MPhil, 9 BSc students and co-supervising 4 PhDs. Dr. Martin has participated and presented at national and international workshops, seminars, and conferences worldwide.

His teaching focuses on rejuvenating the specialisation of Mathematical and Computational Physics at KNUST and Ghana (Africa). This decision was highly due to his affinity for teaching, research, and passion for contributing to Ghana and Africa's social and economic development.

Dr. Martin is motivated to strengthen and broaden Africa's science through Sustainable Capacity Building in TransNational Multidisciplinary Collaboration, enabling quality research, mentorship, and teaching across Ghana (Africa).

PERSONAL INFORMATION

Date of Birth	**22 February, 1988**
Nationality	**Ghanaian**
Marital Status	**Married**
Religion	**Christian**
Interests	**Computational Physics (Digital Twin: MultiScale MultiPhysics Modelling, Machine Learning and Statistical Analysis)**
Personal Email:	**hmartin@knust.edu.gh / headmartin88@gmail.com**
Unit Email:	**mcp.physics@knust.edu.gh / mathcphy@gmail.com**
Phone Number:	**+233 555 653285**

1(a) ACADEMIC DEGREES EARNED WITH DATES

Date	Degree
2016 - 2019	Doctor of Philosophy in Scientific Computing and Industrial Modelling
2013 - 2015	Master of Science in Mathematical Engineering (Mathematics - Physics Modelling)
2007 - 2011	Bachelor of Science in Physics
2006 - 2007	Advanced Diploma in Electrical Engineering Theory

1(b) INSTITUTIONS ATTENDED WITH DATES

Date	Institution
2016 - 2019	Kwame Nkrumah University of Science and Technology, Kumasi National Institute for Mathematical Sciences (NIMS - GH) University of L'Aquila, Italy (Visiting PhD Student) Oulu University, Finland (Visiting PhD Student)
2013 - 2015	University of L'Aquila, Italy Hamburg University, Germany (Exchange Student) Gran Sasso Science Institute, Italy (Visiting Student)
2007 - 2011	Kwame Nkrumah University of Science and Technology, Kumasi
2006 - 2007	St. Martin's Professional Technology, Accra (City and Guilds Institute of London, United Kingdom)
2003 - 2006	Accra Academy, Accra

2. UNIVERSITY TEACHING AND / OR RESEARCH EXPERIENCE WITH DATES

(a) I. Academic Ranks Held

Date	Rank	Institution
08/2020 - date	**Lecturer**, Department of Physics	Kwame Nkrumah University of Science and Technology, Kumasi
08/2018 - 08/2019	**Graduate Assistant**, Department of Physics	Kwame Nkrumah University of Science and Technology, Kumasi
08/2016 - 08/2018	**Masters Teaching Assistant**	National Institute for Mathematical Sciences - Ghana
09/2011 - 09/2012	**Teaching / Research Assistant**,	Kwame Nkrumah University of Science

	Department of Physics	and Technology, Kumasi
07/2007 - 08/2010	**Part-time Lecturer**	St Martin's Professional Technology, Accra, Ghana

2(b) SUPERVISION OF STUDENT PROJECT WORKS/THESES/RESEARCH

Four (4) Doctor of Philosophy Co - Supervision
PhD Mathematical and Computational Physics and PhD Scientific Computing and Industrial Modelling.

1 ***Materials Genomics (Multiscale Multiphysics Modelling and Machine Learning)***

1.i **Mark Paal:** Atomic simulation informed machine learning of porous materials for water purification; [*Physics Dept 2023/24 with UAQ Exchange (Ongoing)*].

1.ii **Henry Elorm Quarshie:** Viscoplastic behaviour of industrial refractory metals under the influence of interstitial solute using first principle informed machine learning; [*Physics Dept. 2020/21 with UAQ Exchange (Ongoing)*].

2 ***Hydrology and Geology Modelling***

2.i **Isaac Afari Addo:** Mathematical modelling of leakages in water distributing systems; [*NIMS - KEEP 2020/21 with UAQ Exchange (Ongoing)*].

3 ***Energy (Renewable) Modelling***

3.i **Frank Kofi Owusu:** Forecasting electricity load demand using an assembled kalman filter state space model; [*NIMS 2020/21 (Ongoing)*].

Seven (7) Master of Philosophy Supervision

MPhil Solid State Physics, MPhil Mathematical and Computational Physics, and MPhil Scientific Computing and Industrial Modelling.

1 ***Materials Genomics (Multiscale Multiphysics Modelling and Machine Learning)***

1.i **Edward Yeboah:** Simulating the Portevin Le-Chartelier (PLC) effect in an interstitial BCC alloy using Monte Carlo; [*RealMaths (UAQ - KNUST) 2022/23 (Ongoing)*].

1.ii **Wilson Abdul-Korah Kansangabata:** Determination of magnetic susceptibility of iron in water using grand canonical Monte Carlo simulation; [*InterMaths (UAQ - KNUST) 2021/22 (**Completed**)*].

2 ***Hydrology and Geology Modelling***

2.i **Sheriff Adonoo:** Optimal control of smart irrigation systems in Ghana; [*InterMaths (UAQ - NIMS) 2020/21 (**Completed**)*].

3 ***Space Physics and Climate Modelling***

3.i **Collins Lartey:** Numerical simulations of dust evolution and planetesimal formation in protoplanetary disks with thin dust rings [*RealMaths (UAQ - KNUST) 2022/23 (**Completed**)*].

3.ii **Peter Dornyame:** Integration of graph clustering algorithms and input-output analysis to enhance supply chain engagement for CO_2 emission reduction: A case of the italian and australian economy [*InterMaths (UAQ - NIMS) 2021/22 (**Completed**)*].

3.iii **Abigail Birago Adomako:** Analysis of convective parameterization schemes in the agro-ecological zones of Ghana using RegCM simulations; [*NIMS - KEEP 2020/21 (**Completed**)*].

4 ***Energy (Renewable) Modelling***

4.i **Enock Darkwa Tweneboah:** Selective harmonic mitigation pulse width modulation (PWM) for harmonic reduction in three-phase two-level investors using genetic algorithm [*InterMaths (UAQ - NIMS) 2021/22 (**Completed**)*].

Three (3) Master of Philosophy Co-Supervision

1 ***Hydrology and Geology Modelling***

1.i **Isaac Monny:** Estimating dipycnal mixing in the subthermocline from high-resolution seismic images using wavelet [*RealMaths (UAQ - KNUST) 2022/23 (Ongoing)*].

2 ***Energy (Renewable) Modelling***

2.i **Michael Brem Quansah:** Model predictive control: A net - zero carbon approach for capacity expansion [*RealMaths (UAQ - KNUST) 2022/23 (Ongoing)*].

3 ***Biophysics, Biomedical and Biological Modelling***

3.i **Millicent Afrifa Opoku:** Analysis of the effects of high-density lipoproteins (HDL) on early formation of a new atherosclerosis plaque model; [*NIMS - KEEP 2020/21 (**Completed**)*].

Two (2) Master of Science Supervision

MSc Physics - IDL.

1 ***Materials Genomics (Multiscale Multiphysics Modelling and Machine Learning)***

1.i **Moses Adasariya:** Leveraging of self-supervised machine learning over supervised machine learning for crystalline materials properties prediction; [*Physics Dept. 2022/23 (**Completed**)*].

1.ii **Eunice Obuo Nkansah:** Modelling the effects of hydrogen induced decohesion on steel using molecular dynamics; [*Physics Dept. 2022/23 (**Completed**)*].

One (1) Master of Science Co-Supervision

1 ***Energy (Renewable) Modelling***

1.i **Julius Jonathan Kukah:** Modelling the influence of environmental conditions on solar panel output: A comparative analysis of test conditions and field data [*Physics Dept. 2022/23 (**Completed**)*].

About Forty-four (44) Bachelor of Science with Twenty-Three (23) Topics for Supervision

Physics with Materials Science, Electronics, Geophysics, Computing, Applied Maths and Meteorology and Climate Science Options.

2023/2024 Academic Year - (Completed)

*1 **Materials Genomics (Multiscale Multiphysics Modelling and Machine Learning)***

1.i **Eugene Mensah Adomako:** Modelling the impulse response of an acoustic space utilising the image source method in COMSOL Multiphysics.

1.ii **Prince Smith Ayipah and Haruna Mubarack:** Water purification with metal-organic framework (MOFs) and zeolites using machine learning (ML).

1.iii **Caleb Fianku Quao and Caleb Amarh Amartey:** Accelerating defect calculations in functional materials using self-supervised learning learning.

1.iv **John Amedzo:** Simulating artificial gravity techniques for mitigating low-gravity effects in space.

*2 **Energy (Renewable) Modelling***

2.i **Salim Asaman Anani Zakari, Emmanuel Kay Kudadze and Samuel Akwasi Kwarteng**: Optimization of green hydrogen production in Ghana with hydroelectric-photovoltaic grid connected power stations.

2022/2023 Academic Year - (Completed)

*1 **Materials Genomics (Multiscale Multiphysics Modelling and Machine Learning)***

1.i **Abraham Gyamfi and Abdul Rahman Mohammed Junior:** Modelling the electromagnetic thermal process in steel hardening.

1.ii **Eugene Kojo Kudzedzi and Eugene Kwame Boafo Asamoah:** Design of adsorbents by screening of metal organic framework (MOFs) and zeolites using quantum machine learning (QML).

1.iii **Saeed Ismail Attabio and Vincent Kumi Anyan:** Supervised machine learning-enabled prediction of hydrogen adsorption in metal organic framework (MOFs) enhancing material discovery for gas storage.

1.iv **Emmanuella Naana Kwakye and Estherlla Kofie:** Enhancing adsorbent zeolite selection for the removal of heavy metals and ions using grand canonical Monte Carlo simulation.

1.v **Benard Abudu Akurugu, Seth Asare and David Pagadam:** Molecular dynamics simulation of hydrogen embrittlement mechanisms in Fe-C structure.

2 ***Space Physics and Climate Modelling***

2.i **Mohammed Iddrisu Nlowie and William Junior Sabi**: Observation of the HI line along the milky way tabletop radio telescope.

2.ii **Wonder Sewavi and Stephen Elikplim Adortsu**: Searching for pulsars in the galactic centre at 3mm and 2mm using a fast-folding algorithm.

*3 **Energy (Renewable) Modelling***

3.i **Raymond Takyi Sam and Ransford Agbemaple**: Developing an optimal solution for generation of hydrogen energy from Ghana's identified renewable resources – A case study.

2021/2022 Academic Year - (Completed)

*1 **Materials Genomics (Multiscale Multiphysics Modelling and Machine Learning)***

1.i **Isaac Danso Obeng:** Predicting the start transformation of pearlite in a continuous cooling transformation (CCT) of steels using an estimated model of ferrite finished

transformation.

2 ***Hydrology and Geology Modelling***

2.i **Melvin Kofi Sherif Boateng and Daniel Boah**: Estimating porosity and volumetric soil water content using integrated Geophysical techniques.

3 ***Space Physics and Climate Modelling***

3.i **Manasseh Etornam D'almeida and Michael Opare Akyea**: Assessing growing degree days using moisture parameters over knust agromet station, Kumasi.

4 ***Energy (Renewable) Modelling***

4.i **Carlos Blemano and Ernest Mensah**: Self-discharge model for supercapacitors incorporating voltage and time as a function.

2020/2021 Academic Year - (Completed)

1 ***Materials Genomics (Multiscale Multiphysics Modelling and Machine Learning)***

1.i **Edward Yeboah and Millicent Botwe:** Simulating the mechanisms of serrated flow of interstitial alloys in bcc using kinetic Monte Carlo (KMC).

1.ii **Abraham Azalekor and Michael Ato Sackey:** Determining and estimating the extent of interaction effect (probing interaction) for the onset continuous cooling transformation in steel.

2 ***Hydrology and Geology Modelling***

2.i **Collins Lartey**: Modelling the volumetric soil water content with climate variability using electrical resistivity method at KNUST agricultural research station, Anwomaso, Kumasi.

2.ii **Isaac Monny and Benjamin Sunkwa**: Modelling the subsurface using quasi-3d data on KNUST campus.

2.iii **Abdul Hafiz Ismail and Abdullah Fussein**: Modelling the volumetric soil water content with climate variability using ground penetrating radar at knust agricultural research station, Anwomaso, Kumasi.

3 ***Energy (Renewable) Modelling***

3.i **Michael Brem Quansah and Lawrence Darko Baah**: Modelling the electrode calendering processes of lithium-ion batteries.

4 Exchange Students Programme Coordination:

Interdisciplinary Mathematics (InterMaths) Network: RealMaths & InterMaths Consortium

KNUST PATH	**NIMS PATH**
Cohort 2024 a. Elvis Adama Ashalley b. Patrick Sommirman Lambon c. Benard Abudu Akurugu d. Seth Asare	Cohort 2021 a. Peter Dornyame b. Ebenezer Danso Effah c. Solomon Yeboah d. Enock Darkwa Tweneboah

e. Patience Yaa Dzigbordi Quashigah	
Cohort 2023 a. Jonathan Dafil	Cohort 2020 a. Sheriff Adonoo b. Emmanuel Agyare c. Alfread Tan d. Charles Kankam Boateng e. Ignatius Nyendah
Cohort 2022 a. Collins Lartey b. Isaac Monny c. Edward Yeboah d. Micheal Brem Quansah	
Cohort 2021 a. Wilson Kansangabata Abdul-Korah b. Sa-ad Ibrahim Yinbil	

2(c) OTHER PROFESSIONALLY RELATED EXPERIENCE

i. POSITIONS HELD

11/24 - date	**Coordinator / Contact Person,** Italo-Ghanaian Mathematical-Physical Modelling for Engineering Network, KNUST.
10/24 - date	**Coordinator / Contact Person**, Perimeter Scholars International (PSI) Start Satellite Programme, KNUST.
11/23 - date	**Postgraduate Coordinator,** Department of Physics, KNUST.
11/23 - date	**Coordinator / Contact Person**, Transnational Educational Initiative (TNE), Enhancing Governance and Innovation Capacities for the Higher Education System Regeneration (ENGINES), KNUST.
09/23 - date	**Coordinator / Contact Person**, Erasmus + (KA171) Inter - Institutional Agreement (UAQ - KNUST), Learning Mobility for Higher Educational Students and Staff.
02/23 - date	**Coordinator / Contact Person**, Interdisciplinary Mathematics (InterMaths) Network, KNUST Path.
02/23 - date	**Local Coordinator**, International Double MSc Degree in Mathematics for Real World Applications (RealMaths) Consortium, KNUST Path.
01/23 - date	**Coordinator**, MSc Physics Programme, Department of Physics, IDL, KNUST.

05/22 - date	**Deputy Local Coordinator**, International Double MSc Degree in Mathematics for Real World Applications (RealMaths) Consortium - NIMS Path.
05/22 - 02/23	**Deputy Local Coordinator**, International Double MSc Degree in Mathematics for Real World Applications (RealMaths) Consortium - KNUST Path.
02/22 - date	**Coordinator**, Exhibition Team, Department of Physics, KNUST.
12/21 - 12/23	**Assistant Examination Officer,** Department of Physics, KNUST.
12/21 - 11/23	**Assistant Postgraduate Coordinator,** Department of Physics, KNUST.
09/21 - 05/22	**Assistant Local Coordinator,** Interdisciplinary Mathematics (InterMaths) - KNUST Path.
06/21 - date	**Contact Person,** Advanced Materials Technology (AMT) Research Group, Department of Physics, KNUST.
03/21 - date	**Academic Tutor,** Department of Physics, KNUST.
01/20 - 05/22	**Assistant Local Coordinator,** Interdisciplinary Mathematics (InterMaths) - NIMS Path.

ii. COMMITTEES

04/25 – date	**Co-Chair,** Interactive Engagement Sub-Committee for the 2025 E-Learning International Conference and E-Learning Awareness Week, KNUST.
02/25 – date	**Member,** Syllabus Review Committee for the Undergraduate Physics Programme
08/24 – 05/25	**Member,** Committee for Merging MPhil Solid State Physics with Materials Science
07/24 – date	**Member,** Postgraduate Coordination Committee, College of Science, KNUST.
01/24 – 08/24	**Co-Opted Member,** College of Science Open Day Committee, College of Science, KNUST.
06/23 – 10/23	**Member,** Low Postgraduate Enrolment Investigation Committee, College of Science, KNUST.
04/23 – date	**Member**, College of Science Curriculum Review and Quality Assurance Committee, KNUST.
02/23 – 06/23	**Co-Opted Member**, Implementation of Online Examination in Communication Skills for All First Years, KNUST.
01/23 – date	**Member,** Planning Committee to Convert Department of Physics into a School,

KNUST.

08/22 – 12/22 **Member,** College of Science Representatives on International Programmes Office Committee to Draft a Memorandum of Understanding.

08/22 – 09/22 **Member**, E – Learning Committee, College of Science, KNUST.

05/22 – date **Member,** Strategic Plan Development Committee, International Programmes Office, KNUST.

02/22 – 04/22 **Member,** Students Financial Services Committee, College of Science, KNUST.

01/22 – date **Member,** Specialization, Industrial Attachment and Internship Programme Committee, Department of Physics, KNUST.

11/21 – 12/22 **Member (Secretary),** High Throughput Computer (HTC) System Installation and Management, College of Science, KNUST. domain: adinkra.knust.edu.gh.

07/21 – date **Member,** Outreach and Collaboration Programme Committee, Department of Physics, KNUST.

04/21 – date **Member,** Developing and Hosting Graduate School Thesis Deposition System, SGS, KNUST – BSU III Project.

03/21 – date **Member,** Programme Accreditation Committee, Department of Physics, KNUST.

02/21 – date **Member,** Space Physics Programme Committee, Department of Physics, KNUST.

10/20 – 02/21 **Member (Secretary),** Syllabus/New Programme - MSc Physics Programme Committee, Department of Physics, KNUST.

11/20 – 12/20 **Member,** Committee to Review the Structure and Content of Mathematics for Physics Courses and Mathematical Physics for Year Four, Department of Mathematics, College of Science, KNUST.

08/20 – 12/20 **Member,** Syllabus/New Programme - Physics with Applied Maths Option for Undergraduate and MPhil Mathematical and Computational Physics Committee, Department of Physics, College of Science, KNUST.

iii. FELLOWSHIPS

11/23 – 12/23 **Visiting Scholar**, University of L'Aquila, Italy, Erasmus Mundus Scholarship Programme, InterMaths Consortium.

09/21 – 10/21 **Visiting Scholar**, University of L'Aquila, Italy, Erasmus Mundus Scholarship Programme, InterMaths Consortium.

iv. REVIEWS AND EXAMINATIONS

02/23 – date	**Panel Member,** Interview of Central Leadership Program (CLP).
02/23 – date	**Coordinator**, Evaluation Committee for Ghanaian Applicant, Interdisciplinary Mathematics (InterMaths) Network.
01/23 – date	**Examiner,** Department of Information Engineering, Computer Science and Mathematics (DISIM), University of L'Aquila (UAQ), Italy.
04/22 – date	**Reviewer,** Metallurgical and Materials Transactions B.
02/22 – date	**Examiner,** Department of Mathematics, KNUST.
07/21 – date	**Examiner,** Department of Physics, KNUST.
02/21 – 03/21	**Reviewer,** Proposals submitted to 6th KNUST Research Fund (KReF), Office of Grants and Research, KNUST (OGR/33/KReF/Vol.5).
09/20 – date	**Reviewer,** Journal of the Ghana Science Association (JGSA).

v. OUTREACH AND FACILITATIONS

19 – 21/11/24	**Facilitator,** Digital Tools for Skills in Research (DT4SiR), E-Learning Centre, KNUST.
06/24 – date	**Coordinator,** E-Learning African International School on Quantum Science and Technology (ELAIS - QST), Department of Physics in collaboration with E-Learning Centre, KNUST.
12/23 – 03/24	**Member**, Training of Trainer on the Operation of Audio-Visuals, College of Science, KNUST.
09/23 – date	**Facilitator,** KNUST MasterClass Training for KNUST and Affiliate Students on the KNUST Learning Management and E-Resources, KNUST.
5 – 14/06/23	**Facilitator,** Training of Faculty on the Usage of the Online Thesis Deposition and Management System, SGS, KNUST.
01/23 – 05/23	**Coordinator,** Quantum Computing Workshop, Department of Physics, College of Science, KNUST, Kumasi, Ghana.
15 – 19/05/23	**Organiser,** Progress Report Clinic 2023 (PRC23), Department of Physics Postgraduate Students, KNUST, Kumasi, Ghana.
04/23 – 08/23	**Coordinator,** Physics Open Day for Senior High Schools 2023 (PODS23), Department of Physics, College of Science, KNUST, Kumasi, Ghana.
04/23 – 07/23	**Member (Contact Person),** Advanced Materials Technology Research Group,

	Public Engagement 2023 (AMT - PE23), Advanced Materials Technology for Sustainable Waste Management: Innovation and Opportunities in Ghana, Department of Physics, College of Science, KNUST, Kumasi, Ghana.
02/23 – 11/23	**Scientific Organising Member,** ICFO-KNUST International School On The Frontiers Of Light, Photonic Sciences: Applications and Opportunities, Department of Physics, College of Science, KNUST, Kumasi, Ghana (https://www.icfo.eu/event/3364/).
1 & 8/02/23	**Facilitator,** Specialization Orientation for Physics Program, Department of Physics, College of Science, KNUST, Kumasi, Ghana.
09/22 – 12/22:	**Member,** Coordination of Laboratory Visit by Competing Schools of the National Junior Science and Maths Quiz (JSMQ) Committee, KNUST.
08/22 – 02/23	**Member,** Workshop for Training of Senior High School (SHS) Teachers Committee, College of Science, KNUST.
30/06/22	**Coordinator,** Science & Technology Fair 2022, by N. A. Kyerema Foundation, Anyinam, Atiwa East District, Eastern Region, Ghana.
10 – 13/05/22	**Coordinator,** 70th Anniversary Science & Technology Exhibition, KNUST, Kumasi, Ghana.
24 – 25/03/22	**Member (Contact Person),** Advanced Materials Technology Research Group, Public Engagement (AMT PE22), Zoom Meeting, KNUST, Kumasi, Ghana.
08/20 – 09/20	**Member,** Online Teaching Training and Certification Workshop for Staff of College of Science, KNUST.

vi. GRANTSMANSHIP / RESOURCE MOBILIZATION

01/25 – 03/26	TransNational Educational Initiative (TNE), Enhancing Governance and Innovation Capacities for the Higher Education System Regeneration (ENGINES) (**€1,924,597.23**).
08/24 – 07/27	Erasmus+ (KA171), International Credit Mobility, Programme, EU, 2024 Edition, No. 2024-1-IT02-KA171-HED-000233409 (**€170,618.00**).
07/24 – 04/25	Ghana – Ghana Quantum Connect, https://physics.knust.edu.gh/news/news-articles/ggqc-dpg-2025-departure-and-arrival-bridging-nations-through-physics (**€32,000.00**)
04/24 – 12/24	Unitary Fund for GQuantum Education, https://unitary.fund/grants/ (**$4,000.00**)
03/24 – 02/25	1 MPhil Mathematical and Computational Physics Students at KNUST Participation Grant, as Exchange Students at DISIM, UAQ, Education Ministry of Foreign Affairs, Italy (**€8,654.00**).

12/23 – 11/24	2 PhDs (Department of Physics, KNUST and NIMS) Participation Grant, as Exchange Students at DISIM, UAQ, Education Ministry of Foreign Affairs, Italy (**€17,308.00**).
09/23 – 07/26	Erasmus+ (KA171), International Credit Mobility, Programme, EU, 2023 Edition, No. 2023-1-IT02-KA171-HED-000128989 (**€65,740.00**).
07/23 – 08/23	4 MPhils Mathematical and Computational Physics Students, Participation Grant, Summer School 2023 at Gdansk University of Technology, Faculty of Applied Physics and Mathematics, Poland (**€1,740.00 ~ PLN 8,000.00**).
02/23 – 11/23	Member, ICFO-KNUST International School On The Frontiers Of Light Photonic Sciences: Applications and Opportunities, Department of Physics, College of Science, KNUST, Kumasi, Ghana (**€35,000.00**).
10/22 – 02/24	1 PhD & 6 MPhils Mathematical and Computational Physics Students at KNUST Participation Grant, as Exchange Students at DISIM, UAQ, Education Ministry of Foreign Affairs, Italy (**€54,240.80**).
10/21 – 03/22	1 PhD & 4 MPhils Mathematical and Computational Physics Students at KNUST Participation Grant, as Exchange Students at DISIM, UAQ, Education Ministry of Foreign Affairs, Italy (**€23,675.00**).
03/21 – 07/21	University of L'Aquila (UAQ) Scholarship to Nyendah Ignatius - One (1) NIMS MPhil Students Participation in InterMaths. (**€3250.00**).

vii. CONFERENCES/SEMINARS/WORKSHOPS

09 - 18/03/25	German Physical Society (DPG) Spring Meeting 2025
13/12/23	SubSaharan Africa Erasmus+ Regional Information Session 2023 in English (Online).
30/11/23	Erasmus+ Capacity Building in Higher Education (CBHE) General CBHE Infoday (Online).
10 – 12/10/23	Regional Erasmus+ Week in Sub-Saharan Africa 2023, Online: Johannesburg, South Africa.
05/22 – 08/22	Mentors training sessions, Online: Central Leadership Program (CLP), Ghana.
23 – 27/05/22	Professional and Communications Training for Scientists (Smr 3710), Online: ICTP – Italy.
23 – 25/02/21	20th International Workshop on Computational Physics and Materials Science: Total Energy and Force Methods (Smr 3554), Online: ICTP – Italy.
01/21 – 02/21	The Hitchhiker's Guide to Condensed Matter and Statistical Physics: Machine

	Learning for Condensed Matter (Smr 3589), Online: ICTP – Italy.
11 – 14/01/21	Transport and Mixing in Complex and Turbulent Flows (CTF2021), Institute of Pure and Applied Mathematics (IPAM), University of California, (UCLA) Los Angeles - United States (US).
18 – 20/11/20	African Physical Society (AfPS) International Conference (Smr 3476), Online: ICTP – Italy.
5 – 6/10/20	Conference on Quantum Annealing/Adiabatic Quantum Computation (Smr 3474), Online: ICTP – Italy.
12 – 13/8/20:	Virtual conference on the occasion of the 70th birthday of Ari Laptev, University of Stuttgart, Zoom.
10 – 14/8/20	Online School on Ultra Quantum Matter, Perimeter Institute (PI) for Theoretical Physics.

viii. OTHER CONFERENCES/SEMINARS/WORKSHOPS

29/6 – 3/7/20:	First Battery Manufacturing Days, **ARTISTIC Project Webinar Series**, **UPJV/LRCS**.
24/6 – 10/7/20:	**Joint GSSI-SISSA virtual course on Mathematical QM and QFT**, Zoom.
4/6 – 5/6/19:	Workshop on Mathematics and Materials Science for Steel Production and Manufacturing (**MIMESIS**), **Thon Hotel Høyers, head office of EFD Induction**, Skien, Norway.
25/4 – 27/4/19:	Ghana Data Science Summit 2019 (**INDABAX GHANA**): The Promise of Data Science for Economic Transformation, **Kofi Annan Center of Excellence in ICT** Accra, Ghana.
28/1 – 2/2/19:	Joint 2nd International Conference of the Pan African Conference on Crystallography (**PCCr2**) and The African Light Source (**AfLS2**): Crystallography a tool for sustainable development in Africa, **University of Ghana, (Legon)**, Accra, Ghana.
20/3 – 12/4/17:	Computational Issues in Oil Field Applications, **Institute of Pure and Applied Mathematics (IPAM), University of California, (UCLA)** Los Angeles - United States (US).
19 – 23/9/16:	Autumn School Algorithmic Optimization (ALOP), **Universität Trier –** Germany.
3 – 15/7/16:	College on Multiscale Computational Modeling of Materials for Energy Applications (smr 2874), **ICTP** – Italy.
14 – 18/3/16:	5 Day Workshop on Building Research Capacity for Academia-Industry Partnership, **KNUST Engineering Guesthouse,** Kumasi – Ghana.

ix. AFFILIATIONS

10/23 – 11/24	SPIE Member.
05/21 – 09/23	Member of Institute of Mathematics & its Application (MIMA).
09/14 – 03/21	Associate Member of Institute of Mathematics & its Application (AMIMA).

3(a) PUBLICATION ARISING OUT OF THE RESEARCH

I. Exhibitions / Software Development

Postgraduate thesis tracking and deposition system, KNUST	Member, Software development, installation and management for SGS administration, HoDs/Coordinators Supervisors, Examiners and Student(s), KNUST *See https://pg.knust.edu.gh, https://ea.knust.edu.gh, https://gs.knust.edu.gh, https://ex.knust.edu.gh, https://thesis.knust.edu.gh,*

3 (b) CONTRIBUTIONS IN CO-AUTHORED PUBLICATIONS

SN	ARTICLES	CONTRIBUTIONS
1.	Annan-Noonoo, E., Peprah, D. K., **Martin, H.**, Labik, L. K., Donkor, M. E. K., Britwum, A., Yaya, A., Elloh, V. W., and Abavare, E. K. K., *Electronic and Magnetic Properties of Ga, As/Br and Partial-Hydrogenation Doped Stanene: First-Principles Calculations*. Adv. Theory Simul - 2401396 (2025). DIO: 10.1002/adts.202401396	Methodology, Formal analysis, Writing - Original draft preparation.
2.	Quarshie, H. E., **Martin, H.**, Abavare, E. K. K., and Continenza, A., *Ab-initio study of the transition pathways for single and double interstitial solute (H, N, O, H-H, N-N and O-O) within bcc refractory metals (Mo and Nb).* MRSA - D - 24 - 00213R1 (2024). DIO: *10.1557/s43580-024-01028-3*	Project administration, Conceptualization, Methodology, Formal analysis and Writing - Reviewing and Editing
2.	Ansi, D., **Martin, H.**, Labik, L. K., Yaya, A., Elloh, V. W., and Abavare, E. K. K., *Molybdenum Induced Modifications in the Quantum Capacitance of Graphene-Based Supercapacitor Electrodes: First-Principle Calculations* Physica Status Solidi (b) 2024, 2400459. DIO: 10.1002/pssb.202400459	Conceptualization, Investigation; Methodology, Formal analysis, Writing - Original draft preparation; Software visualization
3.	Owusu, F. K., Amoako-Yirenkyi, P., Frempong, N. K., Omari-Sasu, A. Y., Mensah, I. A., **Martin, H**., and Sakyi, *A., Seemingly unrelated time series model for forecasting the peak and short-term electricity demand: Evidence from the Kalman filtered Monte Carlo method*. Heliyon (2023). DIO: 10.1016/j.heliyon.2023.e18821	Methodology, Formal analysis, Writing - Original draft preparation.

4.	Boakye, D., **Martin, H**., Labik, L. K., Britwum, A., Nunoo, O. A., Elloh, V. W., Kwakye-Awuah, B., Yaya, A., and Abavare, E. K. K., *Electronic and magnetic properties of transition metal-doped MoS2 monolayer: First-principles calculations.* Physica Status Solidi (b) 260 (7), 2200337 (2023). DIO: 10.1002/pssb.202200337	Methodology, Formal analysis, Writing - Original draft preparation.
5.	Prempeh, K. O. K., Parker-Lamptey, G., **Martin, H.,** and Amoako-Yirenkyi, P., *Boltzmann transformation of radial two-phase black oil model for tight oil reservoirs.* J Petrol Explor Prod Technol (2022). DIO: 10.1007/s13202-022-01528-8	Methodology, Formal analysis Writing- Original draft preparation and Writing - Reviewing and Editing.
6.	**Martin, H.**, Abavare, E. K. K., and Amoako-Yirenkyi, P., *Thermodynamic stable site for interstitial solute (N or O) in bcc refractory metals (Mo and Nb) using density functional theory.* MRS Advances 7, 474–481 (2022). DIO: 10.1557/s43580-022-00280-9	Conceptualization, Methodology, Investigation, Formal analysis, Writing - Original draft preparation and Writing - Reviewing and Editing.
7.	**Martin, H.,** Amoako-Yirenkyi, P., Pohjonen, A., Frempong, N. K., Kömi, J., Somani, C. M., *Statistical modelling for prediction of CCT diagrams of steels involving interaction of alloying elements.* Metall Mater Trans B 52, 223–235 (2021)., DIO: 10.1007/s11663-020-01991-w	Conceptualization, Methodology, Investigation, Formal analysis, Writing - Original draft preparation and Writing - Reviewing and Editing.
8.	Chu S., Bovi, D., Cappelluti, F., Orellana, A. G., **Martin, H.,** and Guidoni, L., *The effects of static correlation between spin centres in multi-center transition metal complexes.* Journal of Chemical Theory Computation (JCTC), (2017) DIO: 10.1021/acs.jctc.7b00316	Methodology, Investigation, Formal analysis, Writing - Original draft preparation and Writing - Reviewing and Editing.
9.	**Martin, H.,** Nunoo, O. A., and Dadson, A. B. C. (2012), *Improving the ductility of locally manufactured steel rods by tempering*, Ghana Science Association Conference Proceedings (GSA/Pub/Vol.5/2012/127).	Methodology, Investigation, Formal analysis, Writing - Original draft preparation and Writing - Reviewing and Editing.

3(c) JOURNAL IN WHICH PAPERS ARE PUBLISHED

SN	JOURNAL	PUBLISHER
1.	MRS Advances	Springer International Publishing
2.	Physica status solidi (b)	Wiley
3.	Heliyon	Elsevier
4.	Physica status solidi (b)	Wiley
5.	Journal of Petroleum Exploration and Production Technology	Springer International Publishing
6.	MRS Advances	Springer International Publishing
7.	Metallurgical and Materials Transactions B	Springer

4. CONFERENCES/SEMINARS/WORKSHOPS AT WHICH PAPERS WERE READ

1. 27th Biennial Conference, Ghana Science Association, Kumasi - Ghana: 10 - 15 July, 2011.

REFEREES

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4. Prof. Rubino Bruno, Vice International Rector, Coordinator RealMaths, Past Coordinator MathMods Programme and Former Head of Department of Information Engineering, Computer Science and Mathematics (DISIM), University of L'Aquila, Italy. Email: bruno.rubino@gmail.com