

CURRICULUM VITAE

Surname : Muhumuza
Given Name(s) : Asaph Keikara
Date of Birth : 08/06/1975
Marital Status : Married
Physical Address : Rwengiri Mirama Rugando Rwampara
District of Birth : Mbarara
Nationality : Ugandan
Religion : Born Again
Address : Busitema University, P. O Box 236, Tororo, Uganda
Mobile Phone : +256 (0) 773 975 770, +256 (0) 701465550
Email : amuhumuza2000@yahoo.co.uk, amuhumuza@sci.busitema.ac.ug
ORCID-id : [0000-0002-1288-9471](https://orcid.org/0000-0002-1288-9471)
Google Cites : https://scholar.google.com/scholar?hl=sv&as_sdt=0%2C5&q=asaph+Keikara+Muhumuza&btnG=

EDUCATION QUALIFICATIONS

Period	Institution	Award
2016 - 2020	Mälardalen University	Ph.D. Mathematics
2004 - 2006	Makerere University	MSc. Maths. Master of Mathematics Degree
1998 - 2001	Makerere University	B.Sc. Ed. Bachelor of Science Education Degree
1996 - 1998	Mbarara High School	U.A.C.E. Advanced Level Certificate
1991 - 1995	Bujaga S.S.S	U.C.E. Ordinary Level Certificate
1983 - 1990	Rwemiyenje P.S	P.L.E Primary Leaving Certificate

WORKING EXPERIENCE

Period	Institution	Position
2007- Date	Busitema University	Lecturer, Pure And Applied Mathematics
2009 - 2015	Islamic University in Uganda	Parttime Lecturer in Mathematics
2010-2015	University of Kisubi	Parttime Lecturer in Mathematics
2003 - 2006	Barham University College	Lecturer, Mathematics and Science
2001 - 2003	Hornby High School	Teacher Mathematics and Chemistry

COURSES TAUGHT AT UNDERGRADUATE LEVEL

The listed courses indicate my vast experience in teaching mathematics courses in both fields of pure and applied mathematics and these include:

COURSES TAUGHT AT UNDERGRADUATE LEVEL

Year I : Elements of Mathematics, Linear Algebra I, Calculus I,

Elements of Probability and Statistics.

Year II : Real Analysis I, Linear Algebra II, Calculus II, Calculus III, Abstract Algebra,

Ordinary Differential Equations, Differential Equations II, Probability Theory.

Year III : Functional Analysis, Topology, Biomathematics, Classical Mechanics II,

Dynamical Systems

COURSES TAUGHT AT POSTGRADUATE LEVEL

Masters : Partial Differential Equations, Continuum Mechanics,

Applied Functional Analysis, Partial Differential Equations (PDEs),

Numerical Solutions to PDEs, Computational Fluid Dynamics,

Methods of Mathematical Physics

Supervision : Supervising THREE MSc. in Industrial Mathematics (MIM) Students

RESEARCH GROUP

Member of the Partial Differential Equations and Applications (PDEAPP) Research Group and I double as Node Coordinator Uganda. The group is composed of members from University of Rwanda, Addis Ababa University, Ethiopia, University of Zambia, Makerere University, Uganda, Busitema University, Uganda, Eduardo Mondlane University, Mozambique, and Joseph Ki-Zerbo University (UJKZ), Burkina Faso

ADMINISTRATIVE DUTIES

1. Coordinator MSc. in Industrial Mathematics (MIM)
2. Research and Master of Science in Industrial Programme Coordinator, Department of Mathematics.
3. Coordinator Programmes Reviews and Development in Department of Mathematics.

RESEARCH AND PUBLICATIONS:

The listed applications are based on my research results that were published as conference proceedings, book chapters and others accepted for publication. In these publications, though co-authored, I am the corresponding author and which justifies my experience in research and publication as listed below:

1. Asaph Keikara Muhumuza, Sergei Silvestrov, Karl Lundengård, Jonas Österberg, Sergei Silvestrov, John Magero Mango, Godwin Kakuba. (2020), “**The extreme points of the Vandermonde determinant on surfaces implicitly determined by a univariate polynomial.**” Published as Book Chapter in International Conference on Stochastic Processes and Algebraic Structures, 791-818, Springer, Cham, 2020.
2. Asaph Keikara Muhumuza, Sergei Silvestrov, Karl Lundengård, Jonas Österberg, Sergei Silvestrov, John Magero Mango, Godwin Kakuba. (2020), “**Optimization Of The Wishart Joint Eigenvalue Probability Density Distribution Based On Generalized Vandermonde Determinant.**” Published as Book Chapter in of International Conference on Stochastic Processes and Algebraic Structures, 818-838, Springer, Cham, 2020.
3. Asaph Keikara Muhumuza, Anatoliy Malyarenko, Sergei Silvestrov. (2017), “**The Lie Symmetry Analysis of the Black-Type Equations in Finance.**” In proceedings of The 17th Applied Stochastic Models and Data Analysis, ASMDA 2017 **International** Conference focused on new trends in theory, applications and software held in De Morgan House of the London Mathematical Society, London, UK, from the 6th to the 9th of June, 2017.
4. Asaph Keikara Muhumuza, Sergei Silvestrov, Karl Lundengård, Jonas Österberg, Sergei Silvestrov, John Magero Mango, Godwin Kakuba. (2018), “**The Generalized Vandermonde Interpolation Polynomial Based On Divided Differences.**” In proceedings

of The 5th Stochastic Modeling Techniques and Data Analysis, SMTDA 2018 International Conference held in on Tuesday 12 - Friday 15 June 2018. Chania, Crete, Greece.

5. Asaph Keikara Muhumuza, Karl Lundengård, Jonas Österberg, Sergei Silvestrov, John Magero Mango, Godwin Kakuba. (2018), “**Properties of Extreme Points of the Joint Eigenvalue Distribution of Wishart Matrix.**” Published as Book Chapter in International Society for the Advancement of Science and Technology, ISAST, 559-571, 2019.
6. Asaph Keikara Muhumuza, Anatoliy Malyarenko, Karl Lundengård, Sergei Silvestrov, John Magero Mango, Godwin Kakuba. (2019), “**Connection Between the Extreme Points of Vandermonde Determinants and Maximization of Risk Measure in Financial Mathematics.**” Yet to be Published as Springer Book Chapter in International Conference on Stochastic Processes and Algebraic Structures, 2019.
7. Asaph Keikara Muhumuza, Sergei Silvestrov, “**Symmetric Group Properties of the Extreme Points of Vandermonde Determinant and Schur Polynomials.**” Yet to be Published as Springer Book Chapter in International Conference on Stochastic Processes and Algebraic Structures, 2019.
8. Asaph Keikara Muhumuza, Anatoliy Malyarenko, Karl Lundengård, Sergei Silvestrov, John Magero Mango, Godwin Kakuba, “**The Wishart Distribution on Symmetric Cones.**” Yet to be Published as Springer Book Chapter in International Conference on Stochastic Processes and Algebraic Structures, 2019.
9. Asaph Keikara Muhumuza, Anatoliy Malyarenko, Karl Lundengård, Sergei Silvestrov, John Magero Mango, Godwin Kakuba, “**The Wishart Distribution on Symmetric Cones.**” Yet to be Published as Springer Book Chapter in International Conference on Stochastic Processes and Algebraic Structures, 2019.
10. Asaph Keikara Muhumuza, Anatoliy Malyarenko, Karl Lundengård, Sergei Silvestrov, John Magero Mango, Godwin Kakuba, “**The Extreme Points of the Vandermonde Determinant and Wishart Ensembles on Symmetric Cones.**” Yet to be Published as Springer Book Chapter in International Conference on Stochastic Processes and Algebraic Structures, 2019.
11. Ebelait Joseph, Twaibu Semwogerere, Nagulama Moses, Keikara Asaph Muhumuza. “**A Mathematical Model on Linkage Leakage in Sewage Pipes Laid in a Porous Ground**

Using Computation Fluid Dynamics.” *East African Journal of Engineering*, 4(1), 22-32, 2021.

12. Wambi Ali, Twaibu Semwogerere, Awichi O. Richard, Keikara Asaph Muhumuza. **“Mathematical Modelling of Oil Pipeline Leakages Using Computational Fluid Dynamics – Case of BIDCO Oil Processing Refinery, Uganda.”** *Journal of Advances in Mathematics*, 21, 25-52, 2022. DOI:10.24297/jam.v21i.9163.

INTERNATIONAL CONFERENCES ATTENDED:

These are some of the important international conferences where I got an opportunity to present some of my research findings, publications and also interacted with many researchers in mathematics that help to strengthen my research problem. Among the international conferences attended included:

1. Applied Stochastic Models and Data Analysis, **ASMDA2017, 06 -10 th June, 2017**, London, UK.
2. International Conference on Stochastic Processes and Algebraic Structures,– From Theory Towards Applications, **SPAS2017, 4-6th October, 2017**, Västerås and Stockholm, Sweden.
3. International Conference on Stochastic Modelling Techniques and Data Analysis, **SMTDA2018, 12-15th June, 2018**, Chania, Crete, Greece.
4. International Workshop on Applied Probability, **IWAP2018, June 18th-21st 2018**, ELTE University, Budapest, Hungary.
5. International Conference on Applied Stochastic Models and Data Analysis, **ASMDA2019, 11-14th June, 2019**, Florence, Italy.
6. International Conference on Stochastic Processes and Algebraic Structures- From Theory Towards Applications, **SPAS2019, 28th Sept – 01st October 2019**, Västerås, Sweden.

IMPORTANT EVENTS ATTENDED:

These were specifically organised by Swedish International Development Agency, Sida, and International Science Programme, ISP, purposely to bring together the PhD students and share the broader knowledge in their respective field of research on international scene. It is through these network special research groups were formed in various fields of mathematics to ensure continuity of research even after PhD. Among the special event attended included:

1. The Nobel Prize Award Ceremony 2016, Nobel Prize Award Ceremony from the Stockholm Concert Hall in Sweden, 10 December 2016.
2. Building future network seminar at Sida headquarters, Stockholm on November 13, 2017.
3. The Nordic Africa Institute, Seminar, September 2017.
4. Building future network seminar at Sida headquarters, Stockholm on February 26-27, 2018.
5. PhD Student Networking & SDG Meeting, Karolinska Intitutet, Stockholm, April 17, 2018.
6. Third Networking Meeting and Building future network – SIDA-ISP2018, Theme: Strengthening Research in Mathematics in Universities with Sida and ISP Support **20th to 24th August 2018 Entebbe, Uganda.**
7. Fourth Network Meeting for Sida- and ISP-funded PhD Students and Postdocs in Mathematics. Theme: Strengthening Research and Postgraduate Training in Mathematics in Universities in Africa **5th to 9th August 2019 Bishoftu, Ethiopia Organized by University of Ethiopia**

SEMINARS AND WORKSHOPS ATTENDED:

These seminars were organised to enrich the PhD students with special knowledge in their field of research and among those I attended included:

1. Intensive Special Semiar on Non commutative differential calculus and its applications in Physics in October 2017
2. Intensive Special Seminar on Discrete mathematical finance models in October 2017.
3. Intensive Seminar on Numerical Analysis for Engineers – SNAE2018, Organised by Mathematics and Applied Mathematics Research Environment MAM, Division of Applied Mathematics, UKK, MDH, November 5-9, 2018
4. Special Worskshop on Engineering Mathematics and Computational Analytical Methods in Engineering - EM-CAME 2019, Organised by Mathematics and Applied Mathematics Research Environment MAM, Division of Applied Mathematics, UKK, MDH, April 1-3, 2019.

5. Intensive Seminar on Matroids, polymatroids and generalizations thereof via cyclic flats, and some connections to different algebraic structures, UKK, MDH, April 2019
6. Intensive Seminar on Matroids, polymatroids and generalizations thereof via cyclic flats, and some connections to different algebraic structures, UKK, MDH, April 2019
7. Special Workshop on Advanced Engineering Numerical Methods, Organised by Mathematics and Applied Mathematics Research Environment MAM, Division of Applied Mathematics, UKK, MDH, November, 2019.
8. Intensive Seminar on Fixed Point Theory and Nonlinear Analysis – Organised by Mathematics and Applied Mathematics Research Environment, MAM, Division of Applied Mathematics, UKK, MDH, October 2019.
9. Intensive Seminar on Multi-resolution, Multivariate operator theory and Non-commutative analysis- Organised by Mathematics and Applied Mathematics Research Environment MAM, Division of Applied Mathematics, UKK, MDH, October, 2019.
10. Intensive Seminar on Graded Associative and Non-associative algebras - Organised by Mathematics and Applied Mathematics Research Environment MAM, Division of Applied Mathematics, UKK, MDH, October, 2019.
11. Intensive Seminar on Graded and Non-associative algebras and their application in physics - Organised by Mathematics and Applied Mathematics Research Environment MAM, Division of Applied Mathematics, UKK, MDH, November, 2019.
12. Intensive Seminar on Stochastic Methods Applied on Condensed Matter Physics – Organised by Mathematics and Applied Mathematics Research Environment, MAM, Division of Applied Mathematics. UKK, MDH, November, 2019.
13. Virtue Seminar/workshop on Fostering meaningful Assessment Amidst Covid-19 and Performance Agreement Training Workshop. Wednesday July 07 to 09, 2021 at Busitema University.
14. Online Webinar Meeting on 28th July, 2021 Titled “*Opportunities within the NDPIII: A Case of Busitema University*” Organized by the University Secretary in collaboration with the University Directorate of Planning is inviting you to attend an starting at 10:00 AM.
15. Virtual Performance Management Training Workshop meeting to take place today tuesday 3rd August 2021 at 10am, Busitema University.

16. Workshop Programme on Open Book Examinations. The date is Monday September 20, 2021 at 9:00 am, Busitema University.
17. Public Lecture Organised by the Office of the Vice Chancellor and the Directorate of Graduate Studies, Research and Innovations (DGSRI) this Wednesday 6th October 2021 at 2pm via Zoom & Facebook, Busitema University.
18. Virtual Training Session on Academic Writing and Publication, Facilitated by Prof. Oleksiyenko Anatoly and Organized by Directorate of Graduate Research and Innovation (DGSRI), held on 15th October, 2021.
19. The First Professorial Inaugural Lecture, Titled: Advancing Research Evidence for Elimination of Malaria in Africa, delivered by Professor Peter OLUPOT-OLUPOT, (MB.ChB, MPH, Ph.D, PDF, SRF & FUNAS), Organised by the Academic Registrar Busitema University together with the Executive Director Uganda National Academy of Sciences (UNAS).
20. Faculty Training on Online Assessment Organized by Busitema University Online Learning Coordinators held on Monday 18th, Wednesday 20th and Friday 22 October, 2021.

FUTURE PLANS AND TARGETS:

Considering my designation as academic staff member, I plan and pray that in the next two to five years I achieve the following:

LEARNING AND TEACHING:

This involves:

- (i) Aligning my learning and teaching with the University's Academic Programs with major focus on the Masters and PhD teaching, research supervision and publications;
- (ii) Guiding my students in strategic initiatives such to ensure their success and retention, graduate employability and technology-enhanced learning;
- (iii) Strengthening quality course teaching using data and technological sources relevant to learning and research objectives;
- (iv) Designing new programs, delivering and evaluating innovative curriculum and teaching practices;

(v) Undertaking leadership in learning and teaching.

RESEARCH INTERESTS / SCHOLARSHIP:

Continuing my research field ensure academic growth which will involve:

- (i) Producing more publications, doing more creative works, patents, winning research grants and funding from external organisations;
- (ii) Developing a national and/or international reputation that uplifts the university's ranking;
- (iii) Solicit for leadership and innovations to improve systems or practices, including scholarship projects focussed on teaching initiatives;
- (iv) Contributing to various research groups and committee;
- (v) Applying for grants, presentations at international workshops, seminars and conferences.

COMPUTER SKILLS:

I can be able to flexibly use the following softwares and packages as well as the ability to adopt to new software usage considering my skills in computing.

- (i) R-Studio for time series data analysis and fitting various financial and economic models
- (ii) SPUS for both computation and data analysis
- (iii) SPSS for general data analysis
- (iv) Matlab for both data analysis, computing and simulations
- (v) Maple for both computing, programming and simulations
- (vi) Mathematica also for computing and simulations
- (vii) Latex for scientific writing especially for complex mathematical expressions and preparing presentations
- (vii) Microsoft Word and Applications
- (ix) Microsoft Excel
- (x) Stata software for statistics and data science

MEMBERSHIP TO PROFESSIONAL BODIES

I am currently a fully registered member to the following bodies:

1. Registered professional teacher under Uganda Education Service Commission
2. Uganda Mathematical Society.

OUTREACH ACTIVITIES

Besides my professional roles of teaching, research and publication, I have gone an extra mile to do the following community outreaches:

1. During school practice exercise I took off time to do career guidance to the students of the schools visited.
2. I spearheaded the formation of the Busitema Staff Sacco which is currently offering financial support to both the Busitema Staff and immediate community
3. I have always acted as the chairperson organising committee of the Keikara Family thanksgiving function which brings together the family and immediate community to instill both spiritual and moral values.
4. I have been an active members and coordinator Uganda side under the Partial Differential Equations and Applications Research group which is promoting the use of mathematics through seminars and workshops in various field and industry in East Africa, Central Africa, South Africa, West Africa and beyond.
5. As coordinator of the Master of Science in Industrial Mathematics, Msc.Ind.Maths. (MIM), I have taken the initiative to contact various industries on research collaboration. In particular, Uganda Petroleum Authority, (PAU), gave a positive response where a proposal is being prepared for submission.
6. I am an active member of and minister at Liberty Worship Center International, Lugala, Kampala. Where I have always reached out to community through crusades and fellowships in preaching the gospel as well doing charity work to the needy under the same ministry.
7. I spearheaded the formation of Keikara Rugando Sacco where I double as board member. This financial institution is doing great work in the community by extending financial services in form of loans for their various projects as well as offering training to the community on how to start and manage projects.

8. Besides being a member of the Keikara Ruganda Sacco, I am also the Advisor and Board member of the Keikara Foundation which has started various projects including the events services and others that are directly benefiting the community.

9. I have always contributed to various charity calls to both the Busitema community and beyond whenever need arises.

PERSONAL VALUES:

These are some of the abilities developed through teamwork, interpersonal and social relationship through career growth and community outreach.

Professional knowledge/skills

This focuses on my own acquired experience, knowledge and expertise in teaching, learning and research to demonstrate good judgment and in relating professional knowledge to work delivery.

Planning, organizing and coordinating

The ability to prioritize my personal work, development and implementation of plans, rationally allocate resources, build group capacity for effective planning and execution of work based on urgency and importance, thus being able to meet deadlines or accomplish tasks in a stipulated time.

Leadership

The ability to keep well informed, open minded, flexible and inquisitive which models and encourages my personal accountability and acting on important decision with uses power and authority fairly as well as demonstrating credible and accountable leadership that champions new initiatives, reinforces and communicates a compelling vision for transformation.

Team work

The ability to work cooperatively and collaboratively, building strong teams, sharing positive information and developing processes to improve the efficiency and coherence of the 'TEAM' based on the acronym: Together Every Achieves More!

Communication

Exhibiting the ability to actively listen and speak respectfully, seeking to send clear oral and written messages, understanding the impact of messages on others with persistence in seeking results which are as precise and accurate as circumstances may permit for the intended message.

Integrity

The ability to communicate values to others with humour, monitoring own actions in consistency with societal values and beliefs, taking pride in being trust worthy, being open and honest all of which provides quality service delivery without need for inducement or compromise..

Time Management

The ability to always be in time and accomplisheing tasks in set time frame and maximizing the use of time to achieve set targets.

MY HOBBIES:

Reading, Writing, Flying, Volunteering, Mentoring, Traveling, Gardening, Investing.

PERSONAL INSPIRATIONS:

The following famous quotes and Bible scriptures motivate me to always stay focused in doing the what is right to accomplish my task with minimum pressure.

“We cannot solve our problems with the same thinking we used when we created them.” Albert Einstein

“The right thing to do is not always the easiest thing to do. There may be some struggles and difficulties but in the end, you will be happy that you did what was right. If you are ever unsure of what to do, close your eyes, take a deep breath, and be still. In the stillness, all answers appear.” Paul Taubman

Whatever you do, work at it with all your heart, as working for the Lord, not for human masters. Colossians 3:23

The fear of the LORD is the beginning of wisdom: and the knowledge of the holy is understanding. Proverbs 9:10

REFERENCES:

1. Assoc. Prof. John Mango, Department of Mathematics Makerere University
mango@cns.mak.ac.ug; mango.john@mak.ac.ug
2. Prof. Sergei Silvestrov, Division of Mathematics and Physics, Mälardalen University, Västerås, Sweden. Sergei.silvestrov@mdu.ac.se
3. Prof. Anatoliy Malyarenko, Division of Mathematics and Physics, Mälardalen University, Västerås, Sweden. Anatoliy.malyarenko@mdu.ac.se
4. Dr. Milica Rančić, Division of Mathematics and Physics, Mälardalen University, Västerås, Sweden. milica.rancic@mdu.se
5. Dr. Godwin Kakuba, HoD Department of Mathematics Makerere University.
kakuba@cns.mak.ac.ug