

CURRICULUM VITAE

1.0 Personal Information:

David Mumo Malonza
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CURRENT ADDRESS:

Mathematics Department,
Kenyatta University,
P.O. BOX 43844 00100,
NAIROBI.

PERMANENT ADDRESS:

Mathematics Department,
Kenyatta University,
P.O. BOX 43844 -00100,
NAIROBI.

Date of Birth: 18th November 1966

Official Languages: English and Kiswahili

Research Interest:

- Dynamical systems for non-linear differential equations
- Functional Analysis- fixed point problems
- Mathematical Modeling- Infectious diseases

Career Objective:

A teaching position and an administrative position in an academic institution

2.0 Education/Qualifications:

Ph.D. in Applied Mathematics Iowa State University,	December 2003 Ames, IA, 50011
Postgraduate Diploma in mathematics (ICTP Diploma) International Centre for Theoretical Physics	September 1997 Trieste, Italy,
Master of Science in Pure Mathematics Kenyatta University,	October 1994 Nairobi, Kenya
B.Ed (Double Mathematics) Kenyatta University,	August 1990 Nairobi, Kenya

3.0 Employment Experience:

Associate Professor
Senior Lecturer
Lecturer
Department of Mathematics

Nov. 2015 - date
Dec. 2010 – Nov. 2015
Dec. 2003 – Dec.2010
Kenyatta University
Nairobi, Kenya

4.0 Administrative Positions:

- **Associate Dean, school of Pure and Applied Science**, 26th February - date
- Chairman – Department of Mathematics, 10th August 2009 – 9th August 2013
- School Examinations Coordinator – SPAS, 1st December 2005 – 9th August 2009
- Departmental Examinations Coordinator- Mathematics Dept. 15th Jan – 30th Nov 2005
- Departmental PAC Representative- Mathematics Dept.
- Member of the School Scholarships and grants Committee – SPAS
- Member of the Editorial Board- International Journal of East Africa, Kenya

5.0 Postgraduate Supervision:

▪ Ph.D Supervision

Complete:

1. 2013- Grace W. Gachigua, JKUAT; Normal forms for Coupled $N_{3^{(n)}}$ Systems.
2. 2015 – Amos N. Magua. KU; “Simulating the effects of Dam Breakage on the Downstream Topography: Morphological Evolution of Mounds and Furrow”.
3. 2015 – Moses R. Kangogo, KU; “Ranks and Sub-degrees of Some Finite Groups and Associated Suborbital Graphs”.

On-going:

4. 2015 – Mary N. Wainaina, CUEA; “Modelling the effects of Dimple characteristics and Spins on the flight trajectory of Golf Balls”
5. 2012 – Lawrence N. Kariuki, KU; “Analysis and Implementation of some Algorithms for Computing of Convariants of Binary Forms and their Corresponding Poincare Series”.
6. 2015- Getachew Teshome; Mathematical Model for Co-Infection of Pneumonia And Typhoid Fever Disease In Ethiopia, with Optimal Control

• MSc Supervision:

On-going:

1. 2015: Timothy Yano; Adm Approach to SEIR Childhood Disease Model with Constant Vaccination Strategy

Complete:

2. 2015: Kennedy O. Adwanyika; Malaria Transmission Dynamics in Vihiga County
3. 2014: Clement N. Mwololo; Normal form for Non-Linear systems with Linear part N_{233} ...
4. 2013: Grace Gakii Muthuri; KU: Mathematical Modeling on TB- HIV Co-Infection

5. 2012-:Cyrus Gitonga Ngari, KU: A Model for Childhood Pneumonia Dynamics
6. 2012: Collins M. Kaunda, KU: “Iterative Schemes for Approximating Fixed Points of Non Expansive Mappings in Closed Convex Banach Spaces
7. 2012- Anthony M. Kinyua, KU: Iterative Methods for Common Fixed Points for Countable Family of Non Expansive Mappings in Uniformly Convex Space
8. 2013 – Rachel K. Sandei, KU; “Impact of Computer-Aided Instruction on Learning among Students who are Gifted and Talented in Selected Centers of Excellency in Kitui County.”
9. 2011- Julius Kawenze Kanyeke, K. U; “Analysis of Hydromagnetic Laminar Fluid Flow between Two Parallel Infinite Plates with Injection.”
10. 2011- Justus Abuko, KU; “Normal Form of Nonlinear System with linear part N_{333} .”
11. 2009, Normal Forms For Couple Takens-Bogdanov System Using Transvectant Method.
12. 2008, Paul N. Kahenya, J.K.U.A.T : Convergence theorems for Uniformly Continuous Pseudocontractive Mappings in Banach Spaces
13. 2007, Joel K. Kimaiyo, K.U.: Stanley Decomposition for Nilpotent Normal forms.
14. 2007, Grace W. Gachigua, K.U.: Stability Analysis for a Coupled Brussellator Model.
15. 2007, Robert C. Langat, K.U.: Unfolding of Normal Forms for Nonlinear Differential Equations with Lunear Part N_5 .
16. 2007, Rachel A. Nyang’inja, K.U.: Unfolding of Nonlinear Differential equations with Linear Part Couples 3×3 Blocks.
17. 2007, William K. Ndung’u, K.U.: The Stanley Decomposition for Coupled Takens-Bogdanov Systems.
18. 2006, Simon N. Mugoh, K.U.: Unfolding for Non-linear Dynamical System
19. 2006, Felistus Shitakha-K.U.: Unfolding in the Presence of Generic Quadratic terms.
20. 2005, Charles W. Kimani-K.U.: Normal Form for Local Dynamical Systems
21. 2005, Alice L. Murwayi-K.U.: Normal Form for Non-linear Dynamical Systems
22. 2005, Necodemus M. Munyeke, K.U.: Normal Forms for Coupled Nonlinear Dynamical Systems.

6.0 Conferences/Seminars/ Workshops

6.1 Seminars/Schools/Workshops Attended/participated:

- CIMPA School Kenya, 2015; Mathematical Modeling and Analysis of complex systems, held 20th – 31st July 2015 at Lake Naivasha Panorama Park, Naivasha, Kenya
- AWMA – AMUCWMA WORKSHOP, 2015 on Women in Mathematics for Social Change and Sustainable livelihoods, held 16th – 18th July 2015 at Lake Naivasha Panorama Park, Naivasha, Kenya
- The Second Kenyatta University International Mathematics Conference, 2015 held 16th - 19th June 2015 at Kenyatta University, Nairobi , Kenya
- Bridging Ages Conference on teaching of Mathematics in an historical environment, held in Ngurunit, Marsabit County, Kenya, 25-29 August 2014
- Mathematical Modeling Pre-Conference School and the 2nd Strathmore University International Mathematics Conference, held 12th – 16th August 2013 at Strathmore University, Nairobi, Kenya

- The First-Kenyatta University Mathematical Modeling Workshop, 2013, held 17 – 12 June 2013 at Kenyatta University, Nairobi, Kenya
- The 2012 US-African Research Workshop On Mathematical Modeling Of Biological Systems And Biodiversity, held November 30 – December 2, 2012 at Crossroads Hotel in Lilongwe, Malawi
- The 30th Southern Africa Mathematical Science Association Conference (SAMSA, 2012), held 26 - 29 November, 2012 at Crossroads Hotel in Lilongwe, Malawi
- The 2012 US-African Advanced Study Institute in Mathematical Sciences, held December 1-14, 2011 at New Fairmont Hotel, Livingstone, Zambia
- School and Conference on Computational Methods in Dynamics held 20th June –8th July 2011, International Center for Theoretical Physics, Trieste, Italy.
- First Kenyatta University International Mathematics Conference, 2011 held 8th -10th June 2011 at Kenyatta University, Nairobi , Kenya
- Management of University Departments held on 1st – 3rd Sept. 2010, at KUCC
- 1st East African Regional Scientific conference held on 10th – 14th August 2010 at Kenyatta University, Nairobi, Kenya.
- 2010 Research Fellowship, June-July 2010 at International Center for Theoretical Physics, Trieste, Italy.
- Data Analysis workshop and conference held on 26th August -4th Sept. 2009 Mathematics Dept. KU.
- 2009: Faculty of Science 2nd Scientific Conference held on 6th – 7th May 2009, JKUAT, Nairobi, Kenya
- 2007: 2nd African Regional Congress of the International Commission on Mathematics Instruction held on 23rd -27th May 2007 at Catholic University of East Africa, Nairobi
- 2006: School on Nonlinear differential equations held on 9th – 27th October 2006 - International Center for Theoretical Physics, Trieste, Italy.
- 2000: Seminar on applied Mathematics, IMA- University of Minnesota, July 2000
- 2001: Seminar on Dynamical System, Northwestern University, Evanston, Illinois, March 2001
- 2002: Seminar on dynamical Systems, University of Minnesota, August 2002
- 1997: School of Algebraic K-Theory and Applications held on 1st – 19th Sept 1997

6.2 Conference Presentations:

- 2015: David M. Malonza: “Normal Forms of Dynamical Systems” A paper presented at the CIMPA School Kenya 2015 titled: Mathematical Modeling and Analysis of Complex Systems held on 20th – 31st July 2015 at Lake Naivasha Panorama Park, Naivasha, Kenya
- 2015: David M. Malonza: (Guest Speaker) “Gender Issues and uptake of Mathematics in Kenya” a Paper presented at the AWMA- AMUCWMA Workshop, 2015 held on 16th – 18th July 2015 at Lake Naivasha Panorama Park, Naivasha, Kenya
- 2015: David M. Malonza and Cyrus Ngari: “ A Model for Childhood Pneumonia Dynamics” A paper presented at Second Kenyatta University International Mathematics conference, 2015 held on 16th – 19th June, 2015 at Kenyatta University, Nairobi, Kenya

- 2012: David M. Malonza; “Normal Form for Systems with Linear part N_{333} ...” A paper presented at 2012 Southern African Mathematical Sciences Association Conference (SAMSA 2012) held from 26th - 29th November 2012 at Crossroads Hotel in Lilongwe, Malawi
- 2011: David M. Malonza and Grace Gachigua: “Stanley Decomposition for Coupled N_{333} ... Systems” Paper presented during First Kenyatta University International Mathematics conference, 2011 held on 8th – 10th 2011 at Kenyatta University, Nairobi, Kenya
- 2011: David M. Malonza, Maria Giulia Delfino , Leo Odongo: “Is it possible to define useful measures in education?” Paper presented during First Kenyatta University International Mathematics conference, 2011 held on 8th – 10th 2011 at Kenyatta University, Nairobi, Kenya
- 2010: David M. Malonza: “Normal forms for non-linear Systems” Paper presented during the School of Pure and applied Sciences 1st East African Regional Scientific conference held on 10th – 14th August 2010 at Kenyatta University, Nairobi, Kenya.
 - 2009: David M. Malonza: “ Stanley Decomposition for Coupled Takens-Bogdanov Systems” Paper presented during the Faculty of Science 2nd Scientific Conference held on 6th -7th May 2009 at JKUAT, Nairobi, Kenya
 - 2003: David M. Malonza: “Normal forms for coupled Takens-Bogdanov Systems” Paper presented at the Conference on Applied Computer Algebra, July 28 – 31, 2003, North Carolina
 - 2003: David M. Malonza: “Normal forms for coupled Takens-Bogdanov Systems” Posters presented at SIAM Conference on Application of Dynamical Systems May 27- 31, 2003, Snowbird, Utah

6.3 Convening and Coordinating Conference:

Title: The Second Kenyatta University International Mathematics Conference, 2015

Theme: Emerging trends in Mathematical Research for Technological and Scientific Development

Dates: 16th - 19th June 2015

Venue: Kenyatta University– Nairobi, Kenya

Title: First Kenyatta University Mathematical Modeling Workshop, 2013

Theme: Enhancing Mathematical modeling for Research and Development

Dates: 17th -21th June 2013

Venue: Kenyatta University– Nairobi, Kenya

Title: First Kenyatta University International Mathematics Conference, 2011

Theme: The Role of Mathematics as a Tool for Development

Dates: 8th -10th June 2011

Venue: Kenyatta University, Nairobi, Kenya

Title: 1st Data Analysis workshop and Conference

Theme: Mentoring African Research in Mathematics

Dates: 26th August -4th September 2009

Venue: Mathematics Department – Kenyatta University, Kenya

Title: 2nd African Regional Congress of the International Commission on Mathematics Instruction

Theme: Enhancing Innovative Responses To challenges In Mathematics Instruction

Dates: 23rd – 27th May 2007

Venue: Catholic University of East Africa, Nairobi, Kenya

7.0 Research and Publications:

7.1 Article in referenced Journals

a) Single Authorship:

1. David M. Malonza: Normal forms for coupled Takens-Bogdanov Systems, *Journal of Nonlinear Mathematical Physics*, Vol. 11, no.3 (2004), p376-398.
2. David M. Malonza: Stanley Decomposition for Coupled Takens-Bogdanov Systems, *Journal of Nonlinear Mathematical Physics*, Vol. 17, no.1 (2010), p69 - 85.
3. David M. Malonza: Report of Asymptotic Unfolding for a Single Takens-Bogdanov System- *Archimedes J. Math.*, 3(2)(2013), 107-117

b) Multiple Authorship:

4. **David Malonza**; James Murdock: "An Improved Theory of Asymptotic Unfoldings". *Journal of Differential Equations* 247 (2009), p685-709
5. **David M. Malonza**; Eric U. Ofoedu: "Hybrid Approximation of Solutions of Nonlinear Operator Equations and Application to Equation of Hammerstein-type" - *Journal of Applied Mathematics and Computation – vol. 217(3), 2011, 6019 – 6030*
6. **David M. Malonza**; Habtu Zekeye: "Hybrid Approximation of Solutions of Integral Equations of Hammerstein Type". *Arabian Journal of Mathematics-* (2013) 2: 221 - 232
7. Grace Gachigua, **David Malonza** and Johana Sigey: "Normal Form for Systems with linear part $N_{3(n)}$ " *Journal of Applied Mathematics*, 2012, 3, 1641-1647
8. Grace Gachigua, **David Malonza** and Johana Sigey: "Ring of Invariants for systems with linear part $N_{3(n)}$ " *American International Journal of Contemporary Research Vol. 2 No. 11; 2012*, 86-99
9. Robert Langat and **David Malonza**: "Unfolding Of Normal Forms Of Non-Linear Differential Equations With Linear Part N_5 , *Archimedes J. Math.*, 4(1) (2014), 45 – 66.
10. Cyrus G. Ngari, **David M.Malonza**, Grace G. Gakii; " A Model for Childhood Pneumonia Dynamics" – *Journal of Life Sciences Research*, (2014) 1(2), 31 - 40
11. Bewketu T. Bekele, Megan R'ua, **David M. Malonza** and Nomatter Chiduku: "The Implications of HIV Treatment on the HIV-Malaria Coinfection Dynamics: A Modeling Perspective," *BioMed Research International*, vol. 2015, Article ID 659651, 14 pages, 2015. doi:10.1155/2015/659651."

7.2 Papers in Conference Proceedings:

- 2015: **David Malonza** and Cyrus Ngari: "A Model for Childhood Pneumonia Dynamics" Proceedings of the Second Kenyatta University International Mathematics conference, 2015 held on 16th – 19th 2015 at Kenyatta University, Nairobi, Kenya
- 2012: D. M. Malonza, G. W. Gachigua and J.K. Sigey: "Ring of Invariants for Systems with linear part $N_{3(n)}$ " Proceedings of the 30th Southern Africa Mathematical Association (SAMSA) Conference, held from 26th – 29th November 2012 at Crossroad Hotel, Lilongwe, Malawi.

- 2012: D. M. Malonza, G. W. Gachigua and J.K. Sigey: “Normal forms for Systems with linear part $N_{3^{(n)}}$ ” Proceedings of the 30th Southern Africa Mathematical Association (SAMSA) Conference, held from 26th – 29th November 2012 at Crossroad Hotel, Lilongwe, Malawi.
- 2011: **David Malonza** and Grace Gachigua: “Stanley Decomposition for Coupled $N_{333\dots}$ Systems” Proceedings of the First Kenyatta University International Mathematics conference, 2011 held on 8th – 10th 2011 at Kenyatta University, Nairobi, Kenya
- **David m. Malonza** (2009): Stanley Decomposition for Coupled Takens-Bogdanov systems; Proceedings of the Faculty of Science 2nd Scientific Conference held on 6th – 7th May 2009 at Jomo Kenyatta University of Agriculture and Technology.

8.0 **Projects/Research Collaboration:**

- 2009 – 2013: Mentoring African Research Mathematics (MARM) under the auspices of AMSI- a European Sponsored Project in collaboration with Prof. Enrico Rogora, University of Rome, Department of mathematics, p.le A. Moro 5, 00185 ROMA
- 2012- Date University of Rome “La Sapienza”, Department of Mathematics. Joint PhD supervision.

9.0 **National and International Recognition:**

- **Guest Speaker:** Kwa-Ngundu primary school- Alumni re-union, August 2015
- **Invited speaker:** The AWMA- AMUCWMA - Workshop for women- 16- 18 July-2015
- **Invited Lecturer** at the CIMPA School Kenya- 20th – 31st July 2015
- **Programmes peer reviewer** –Commission for University Education, Kenya- 2014 – date
- **Guest of Honor:** Matinyani Secondary School, 6th June 2013
- Board of Governors Member – Kwa-Ngindu Secondary School- 2012 - date
- Board of Governors Member – COMESTEA - 2012 – date
- Book Review “ Mathematical Proficiency for All” by Samuel Mwalili, 2009
- Writing of the Secondary Alternative Mathematics Syllabus and Teachers orientation Manual, K.I.E, Nairobi, Kenya, 2008
- Curriculum Review - Tangaza College, Nairobi, Kenya, 2008
- Reviewer of Manuscript, “ The Spectrum of the Norlund Q Operator on C_0 Space”, Journal of Patron; Mathematics club, Kenyatta University, 2009 – date

10.0 **External Examination:**

- External Examiner - Dedan Kimathi University, Nyeri, Kenya- 2015 - date
- External Examiner - Technical University of Kenya, Nairobi, Kenya- 2014 - date
- External Examiner - Taita Taveta University College , Voi, Kenya, 2013 – date
- External Examiner – Embu University College, Embu, Kenya, 2013 – Date
- External Examiner – South Eastern University College, Kitui, Kenya , 2011 - 2015
- External Examiner - Kigali Institute of Science &Technology, Rwanda, 2011- 2013
- External Examiner – Marist International College, 2010 – 2013
- External Examiner – PhD Thesis in Applied Mathematics, JKUAT, 2010
- External Examiner – Kenya Polytechnic University College, 2010
- External Examiner – Tangaza College, 2010
- External Examinations Moderator- KTTC, 2008 - date

11.0 Commission for University Education, Kenya - Programmes peer reviewed

- Bachelor of Science (Actuarial Science) – Mt. Kenya University – 2014
- Bachelor of Science (Actuarial Science) - KCA University – 2015
- Master of Science (Biomathematics) - Strathmore University – 2016

12.0 Membership to University Committees:

- Chairman, Board for International Center for Capacity Development, KU – 2015 - date
- A member to the University Students Disciplinary Appeals Committee – 2014 to date
- A member to the University Promotion and appraisal Committee – 2014 to date
- A member to the Kenyatta University self-Evaluation Assessment Committee- 2013
- A member to the Bed (Technical and Vocational Education) Curriculum Development Committee – 2012 to date

13.0 Academic Leadership:

- Initiated and provided leadership in the development of the following programmes in the department of Mathematics:
 - Bachelor of Science (Actuarial Science) – 2012
 - Bachelor of Science (Mathematics and Computer science) – 2013
- Developed Mathematics courses for Kiambu Insitutute of Science and Technology (KIST).

14.0 Membership to Professional Bodies:

- The Abdus Salam International Centre for Theoretical physics, eJournal Delivery Service (eJDS)
- Southern African Mathematical Science Association (SAMSA)

15.0 External and Internal Grants:

- 2011: Ksh. **500,000**; Conference Research Grant by National Council of Science and Technology
- 2013: Ksh. **300,000**; Workshop Research Grant by National Council of Science and Technology
- 2015: **2000** British pounds; conference Research Grant by London Mathematical Society.
- 2015 –Ksh. **200,000**; Conference Research Grant by NACOSTI
- 2015 – **1000** Euros; Conference Research Grant by CDC through IMU.

16.0 Community Service

- 2014; donated Ksh. 20,000 to Kwa-Ngindu Secondary school as part of money for installation of electricity and building of classrooms.
- March 2015; Founder and Member of Kitui-Misewani community resource center. Donated land for the temporary housing of a community library. Currently mobilizing resources.

17.0 References:

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