

**VIRTUAL SAMSA MASAMU ADVANCED STUDY INSTITUTE (MASI)**  
**Friday – November 20 – Sunday – November 29 – 2020**  
 All times Central Africa Time (CAT) (GMT+2)

**2020 SAMSA Masamu Program Schedule**

<b>Friday – November 20:</b>		
Registration and Opening Session	1600 – 1700	Zoom
Institute Planning Meetings	1700 – 1900	Zoom
<b>Saturday – November 21:</b>		
Institute	1600 – 2000	Zoom
<b>Sunday – November 22:</b>		
Institute	1600 – 2000	Zoom
<b>Monday – November 23:</b>		
SAMSA Conference	1600 – 2000	Zoom
Institute	Flexible	
<b>Tuesday – November 24:</b>		
SAMSA Conference	1600 – 2000	Zoom
Institute	Flexible	Zoom
<b>Wednesday – November 25:</b>		
SAMSA Conference	1600 – 2000	Zoom
Institute	Flexible	Zoom
<b>Thursday – November 26:</b>		
Thanksgiving Holiday		
Institute	Flexible	Zoom
<b>Friday – November 27:</b>		
Institute	1600 – 2000	Zoom
<b>Saturday – November 28</b>		
Research Workshop	1600 – 2000	Zoom
<b>Sunday – November 29</b>		
Institute Planning Workshop and Closing Session	1600 – 2000	Zoom

**Note:**

1600 CAT is 1400 GMT, 1500 WAT, 9am EST, 8am CST, 7am MST, and 6am PST in November.



**SAMSA Masamu Program**  
**2020 Masamu Advanced Study Institute (MASI)**



**RESEARCH WORKSHOP**

**SATURDAY 28 November, 2020**

**Time**

16:00-16:05 **Welcome**

**Research Team**

16:05-16:20

1

**Algebra Research Group (15 mins)**

Cohomology of Lie Algebras

**Research Team**

16:20-16:30

1

**Biostatistics Research Group (40 mins)**

Systematic review and meta-analysis of the prevalence and incidence of cancer in Sub-Saharan Africa

16:30-16:40

2

Determinants and inter-country variations of the awareness and testing of Cancer in Sub-Saharan Africa: a multilevel analysis using health survey data

16:40-16:50

3

Common and divergent spatial-temporal trends in cancer-related mortality in South Africa

16:50-17:00

4

Survival and competing risk modeling for cancer patients in select SSA countries..

**Research Team**

17:00-17:10

1

**Financial Mathematics Research Group (50 Mins)**

Insurance

17:10-17:25

2

Insurance and Climate

17:25-17:40

3

Basel and Solvency - Defaultable Bonds (Stochastic Control, Balance Sheet Optimization)

17:40-17:50

4

Big Data and Artificial Intelligence, and their Applications to Mathematics of Finance

17:50-18:00

**Ten Minute BREAK**

**Research Team**

18:00-18:15

1

**Mathematical Biology Research Group (1hr 45mins)**

Crime Models with Territorial Features

18:15-18:30

2

Stigma modeling with machine learning and causal inference

18:30-18:45

3

Rapid Detection Systems

18:45-19:00

4

Modelling, Analysis and Simulations of Bulk-Surface PDEs

19:00-19:15

5

Molecular Mechanisms in the Evolution of SARS-CoV2

19:15-19:30

6

COVID-19 Modeling: Impact of Household Transmission

19:30-19:45

7

Paternity/Elephants

19:45-20:00 **Sunday Program Overview**

**SUNDAY 29 November, 2020**

**Time**

16:00-16:05 **Welcome**

**Research Team**

16:05-16:20

1

**Analysis Research Group (30 mins)**

Riesz Spaces, Ordered Vector Spaces, Operator Theory and their Applications

16:20-16:35

2

Fixed Point Theory, Nonlinear Analysis, and Harmonic Analysis

**Research Team**

16:35-16:45

1

**Graph Theory Research Group (1 hr 10 mins)**

Constructing graphs with prescribed radius, diameter, center, and with vertex connectivity

16:45-16:55

2

p-eccentricity in connected graphs

16:55-17:05

3

The (n,k,t) extremal problem

17:05-17:15

4

Properties of geodetic graphs

17:15-17:25

5

Secure-domination in graphs

17:25-17:35

6

Edge-colorings of connected graphs

17:35-17:45

7

A decomposition problem

17:45-17:55

**Ten Minute BREAK**

**INSTITUTE PLANNING WORKSHOP & CLOSING SESSION**

17:55-18:15

Activities - research, visits, and recruiting

18:15-18:30

2021 MASI, Workshops, and SAMSA Conference

18:30-18:45

Closing

19:00-20:00

**MASI CAMPUS**

Goodbyes and Networking



## 2020 Masamu Program Participants by Research Group

### ALGEBRA

Jean Baptiste Gatsinzi	Faculty	Botswana International University of Science and Technology	Botswana
Oteng Maphane	Graduate Student	Botswana International University of Science and Technology	Botswana
Overtoun Jenda	Faculty	Auburn University	United States
Yuki Takahashi	Undergraduate Student	Grinnell College	United States

### ANALYSIS

Abubakar Adamu	Graduate Student	African University of Science and Technology	Nigeria
Anas Yusuf	Graduate Student	AIMS	South Africa
Basit Ali	Faculty	University of Management and Technology	Pakistan
Dinna Ranirina	Faculty	Stellenbosch University	South Africa
Eddy Kwessi	Faculty	Trinity University	United States
Geraldo De souza	Faculty	Auburn University	United States
Joseph Owuor Owino	Graduate Student	Stellenbosch University	South Africa
Katlego Sebogodi	Faculty	University of Johannesburg	South Africa
Ma'aruf Minjibir	Faculty	University of Nigeria at Kano	Nigeria
Magadi Mabe	Faculty	University of Johannesburg	South Africa
Mariama Ndiaye	Faculty	Gaston Berger University	Senegal
Misha Mohsin	Graduate Student	University of Management and Technology	Pakistan
Mokhwetha Mabula	Faculty	University of Pretoria	South Africa
Moustapha Sene	Faculty	Gaston Berger University	Senegal
Ngalla Dijitte	Faculty	Gaston Berger University	Senegal
Nozara Sundus	Graduate Student	University of Management and Technology	Pakistan
Ntombifuthi Khoza	Graduate Student	University of Pretoria	South Africa
Ryan W. Matzke	Graduate Student	University of Minnesota	United States
Sello Mbambo	Faculty	University of the Free State	South Africa
Tshikhudo Lukoto	Faculty	University of Limpopo	South Africa
Zechariah Mushaandja	Faculty	Botswana International University of Science and Technology	Botswana

### BIOSTATISTICS

Bernard Omolo	Faculty	University of South Carolina Upstate	United States
Geofrey Chiyuzga	Graduate Student	University of Malawi	Malawi
Halima Twabi	Graduate Student	University of Malawi	Malawi
Innocent Maposa	Faculty	University of the Witwatersrand	South Africa
Jealous Nyasulu	Graduate Student	University of Malawi	Malawi
Jesca Batidzirai	Graduate Student	University of KwaZulu-Natal	South Africa
Maniford Kumposha	Graduate Student	University of Malawi	Malawi
Michael Chipeta	Postdoc	Oxford University	United Kingdom
Mohanad Mohammed	Graduate Student	University of KwaZulu-Natal	South Africa
Nobuhle Mchunu	Researcher	South African Medical Research Council	South Africa
Oliva Safari	Researcher	SADC-Elimination 8, Windhoeak	Namibia
Portia Nevhungoni	Researcher	South African Medical Research Council	South Africa
Samuel Manda	Researcher	South African Medical Research Council	South Africa
Shufaa Uvila	Graduate Student	Kilimanjaro Christian Medical University College	Tanzania
Tshifhiwa Nkwenika	Researcher	South African Medical Research Council	South Africa
Adatia Chivafa	Graduate Student	University of the Witwatersrand	South Africa

### GRAPH THEORY

Alex Alochukwu	Graduate Student	University of Johannesburg	South Africa
Alex Stevens	Graduate Student	University of Denver	United States
Amber Scruggs	Faculty	University of Kentucky	United States
Andrew Owens	Faculty	Widener University	United States
Brandon Du Preez	Graduate Student	University of Cape Town	South Africa
Cadavious Jones	Faculty	Alabama State University	United States
Calum Buchanan	Graduate Student	University of Vermont	United States
Fadekemi Janet Osaye	Faculty	Auburn University	United States
Hunter Rehm	Graduate Student	University of Vermont	United States
Imran Allie	Faculty	University of Cape Town	South Africa
Katherine Perry	Faculty	Soka University of America	United States
Khumbo Kumwenda	Faculty	Mzuzu University	Malawi
Paul Horn	Faculty	University of Denver	United States
Peter Dankelmann	Faculty	University of Johannesburg	South Africa
Peter Johnson	Faculty	Auburn University	United States

Puck Rombach	Faculty	University of Vermont	United States
Sonwabile Mafunda	Graduate Student	University of Johannesburg	South Africa
Stacie Baumann	Graduate Student	Auburn University	United States
Stephan Wagner	Faculty	Uppsala University	Sweden
William Jones	Undergraduate Student	SUNY at Binghamton	United States

### **MATH BIO**

AJ Meir	Faculty	Southern Methodist University	United States
Anotida Madzvamuse	Faculty	University of Sussex	United Kingdom
Ash Abebe	Faculty	Auburn University	United States
Aziz Yakubu	Faculty	Howard University	United States
Benjamin Levy	Faculty	Fitchburg State University	United States
Christina Edholm	Faculty	Scripps College	United States
Dave Goldsman	Faculty	Georgia Tech	United States
Eduard Campillo-Funollet	Postdoc	University of Sussex	United Kingdom
Edward Lungu	Faculty	Botswana International University of Science and Technology	Botswana
F. Stephen Dobson	Faculty	Auburn University	United States
Farai Chirove	Faculty	University of Johannesburg	South Africa
Farai Nyabadza	Faculty	University of Johannesburg	South Africa
Folashade Agosto	Faculty	University of Kansas	United States
Francisco Javier Arsuaga	Faculty	University of California, Davis	United States
H. John B. Njagarah	Faculty	Botswana International University of Science and Technology	Botswana
Hannah Correia	Postdoc	Harvard University	United States
Hellen Machingauta	Graduate Student	Botswana International University of Science and Technology	Botswana
Ioannis (John) Sgouralis	Faculty	University of Tennessee	United States
Jane C. Pagan'a	Graduate Student	University of Zimbabwe	Zimbabwe
Jane White	Faculty	University of Bath	United Kingdom
John-Paul Clarke	Faculty	Georgia Tech	United States
Kudzanayi Mapfumo	Graduate Student	University of Zimbabwe	Zimbabwe
Lee Spence	Graduate Student	University of Tennessee	United States
Lois Okereke	Graduate Student	African University of Science and Technology	Nigeria
Marilyn Ronoh	Graduate Student	University of Johannesburg and University of Nairobi	Kenya
Michael Washington	Researcher	US Centers for Disease Control	United States
Moathodi (Archie) Kgosiore	Faculty	Botswana University of Agriculture and Natural Resources	Botswana
Obias Chimbola	Graduate Student	Botswana International University of Science and Technology	Botswana
Phillip Andreae	Faculty	Meredith College	United States
Pretty Cynthia	Graduate Student	University of Nairobi	Kenya
Semu M. Kassa	Faculty	Botswana International University of Science and Technology	Botswana
Skylar Tree Burton	Postdoc	University of Wisconsin	United States
Sofia Jakovcevic	Undergraduate Student	University of California, Davis	United States
Suzanne M. Lenhart	Faculty	University of Tennessee	United States
Tefa Kaisara	Graduate Student	University of Johannesburg	South Africa
Tianna Burke	Graduate Student	Auburn University	United States
Ticha Chikore	Graduate Student	University of Johannesburg	South Africa
Victor Ogesa Juma	Postdoc	University of Nairobi	Kenya
Vincent Nandwa Chiteri	Graduate Student	University of Nairobi	Kenya
Williams Chukwu	Graduate Student	University of Johannesburg	South Africa

### **MATH FINANCE**

Calisto Guambe	Faculty	University of Pretoria	South Africa
Confess Matete	Faculty	Great Zimbabwe University	Zimbabwe
Elias Offen	Faculty	University of Botswana	Botswana
Eriyoti Chikodza	Faculty	Great Zimbabwe University	Zimbabwe
Farai Julius Mhlanga	Faculty	University of Limpopo	South Africa
Giulia Di Nunno	Faculty	University of Oslo	Norway
Isabelle Simpson	Undergraduate Student	University of Denver	United States
Jezepher Chidzvetse	Faculty	University of Zimbabwe	Zimbabwe
Lesiba Galane	Faculty	University of Limpopo	South Africa
Masimba Mutakaya	Faculty	Midlands State University	Zimbabwe
Memory Mandiudza	Graduate Student	Great Zimbabwe University	Zimbabwe
Nicholas Mwareya	Faculty	Great Zimbabwe University	Zimbabwe
Queensley Chukwudum	Faculty	University of Uyo	Nigeria
Rodwell Kufakunesu	Faculty	University of Pretoria	South Africa
Siboniso Nkosi	Faculty	University of Limpopo	South Africa
Sure Mataramvura	Faculty	University of Cape Town	South Africa

SAMSA 2020: VIRTUAL CONFERENCE PROGRAMME SCHEDULE

MONDAY, NOVEMBER 23, 2020

Time slot				
14:00-14:15	Opening Remarks by the <b>President of SAMSA: Prof. Sandile Motsa</b>			
14:15-14:50	<b>Plenary Talk:</b> Prof. Farai Nyabadza			
14:50-15:00	<b>Transition to respective breakaway sessions</b>			
	<b>STREAM ONE</b>	<b>STREAM TWO</b>	<b>STREAM THREE</b>	<b>STREAM FOUR</b>
CATEGORY	<b>Analysis</b>	<b>Biomathematics</b>	<b>Math. Finance</b>	<b>Statistics</b>
<b>CHAIRPERSON</b>	<b>Dr Venuste Nyagahakwa</b>	<b>Dr Joseph Malinzi</b>	<b>Dr Farai J. Mhlanga</b>	<b>Dr. Innocent Maposa</b>
15:00-15:30	Mr Kentse Maefo	Dr Vusi Magagula	Mr Thabani Gwebu	Dr Inger Fabris-Rotelli
15:30-16:00	Dr Moustapha Sene	Prof. Senelani Musekwa	Mr Michele Giordano	Mr David Oyoo
16:00-16:30	Dr Benard Okelo	Dr Eduard Campillo-Funollet	Dr Adamu Abdullahi	Dr Bubacarr Bah
16:30-17:00	Mr Joseph O. Owino	Mr Isaac Onwubuya	Prof. Carlos Escudero	Mr Olayemi J. Ibidoja
17:00-17:30	Dr Dinna Ranirina	Dr F.B. Agosto	Dr Queensley Chukwudum	Ms Masego Otladisa
17:30-18:00	Ms Lois Okereke	Prof. Javier Arsuaga	Dr Rodwell Kufakunesu	Mr Rasaki Olanrewaju

- The time indicated on the programme is the Southern Africa Standard time.
- The presentation should take **20** minutes and allow for about **5** minutes for questions and **5** minutes to transition from one talk to the next.
- The presenters may share their slides with the session chairperson, who may assist with sharing the slides just in case sharing the slides from the presenter's end fails.

## SAMSA 2020: VIRTUAL CONFERENCE PROGRAMME SCHEDULE

Tuesday, NOVEMBER 24, 2020

Time slot				
	<b>STREAM ONE</b>	<b>STREAM TWO</b>	<b>STREAM THREE</b>	<b>STREAM FOUR</b>
CATEGORY	<b>Analysis</b>	<b>Biomathematics</b>	<b>Math. Finance</b>	<b>Statistics</b>
CHAIRPERSON	<b>Dr Benard Okelo</b>	<b>Dr Vusi Magagula</b>	<b>Prof. Carlos Escudero</b>	<b>Dr Bubacarr Bah</b>
15:00-15:30	Dr Venuste Nyagahakwa	Dr Joseph Malinzi	Prof. Giulia di Nunno	Ms M. Gabanakgosi
15:30-16:00	Mr Emeka Godwin	Ms Mawire	Dr Justin Chirima	Dr Innocent Maposa
16:00-16:30	Dr G.C. Ugwunnadi	Dr Muthuri	Dr Samuel A. Gyamerah	Mr Nicholas S. Adam
16:30-17:00	Ms Grace Ogwo	Mr Joseph Ndenda	Mr David Chikutuva	Dr Lawrence Kazembe
17:00-17:30	Mr Adeolu Taiwo	Prof. Benjamin Levy	Mr Benjamin Musvaire	Mr Rasaki Olawale Olanrewaju
17:30-18:00	Dr A. Adamu	Ms Zviiteyi Chazuka	Mr Faithful Onwuegbuche	Mr Timotheus Darikwa
18:00-18:30	Dr Ma'aruf S. Minjibir		Mr Masimba Mutakaya	

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- The presentation should take **20** minutes and allow for about **5** minutes for questions and **5** minutes to transition from one talk to the next.
- The presenters may share their slides with the session chairperson, who may assist with sharing the slides just in case sharing the slides from the presenter's end fails.

