



**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

