



BOOK *of* ABSTRACT



National

3. SALIHU, O. N. Computational Methods in Fluid Dynamics. 34th Annual Conference of the Nigerian Mathematical Society (NMS) at University of Lagos, Nigeria Held from 23rd - 26th June, 2015.



ANNUAL CONFERENCE *of the* **Nigerian** **Mathematical** **Society (NMS)**

***Theme:* MATHEMATICS FOR
SUSTAINABLE DEMOCRACY AND
NATIONAL DEVELOPMENT**

Host:
Department of Mathematics,
University of Lagos.

Date: 23rd-26th June, 2015

Welcome to the
34th Annual Conference of the Nigerian Mathematical Society (NMS)
Host: Department of Mathematics, Unilag.

Order of Events

Tuesday 23rd June, 2015

Venue

7pm

Wednesday 24th June, 2015

Arrival

Department of Mathematics

NMS Council Meeting

Opening Ceremony Venue

MAIN AUDITORIUM (SSH)

9:00am

Arrival of Participant, Special Guests & Dignitaries 10:00am

National Anthem

10:05am

Opening Prayer

10:10am

Introduction of Dignitaries

10:20am

Welcome Address by the Chief Host: Vice-Chancellor, UNILAG

10:30am

Chairman's opening Remark: Prof. J. A. Adepoju,

10:40am

Remarks by: President, Nigerian Mathematical Society

10:50am

Remarks by Special Guest of Honour: The Governor, Lagos State

11:05am

Remarks by: Director, Mathematical Centre, Abuja.

11:25am

Presentation of Plaque to the Family of Prof. Chike Obi (Late)

11:35am

Closing Remark by: Dean, Faculty of Science

11:45am

Vote of thanks by LOC chairman, HOD Mathematics

11:50am

Closing Prayer

12:15 - 1.00pm

Invited Lecture I : **Mr. Mustapha Chike-Obi, Abuja (SSH)**
(Mathematics as a key for National Development)

1:00 - 2.00pm

Lunch Break

2:00 - 4.00pm

NMS Merit Award Ceremony

4:00 - 5:30pm

First Parallel Session (FOS)

6:00pm

Dinner

Thursday 25th June, 2015

Venue

**FACULTY OF SCIENCE (FOS)/ STAFF SCHOOL
HALL(SSH)**

9:00am - 9:45am

Invited Lecture II : **Professor Aderemi Kuku (SSH)** *(K-theory, Representation Theory and Classification of various Mathematical Objects and Structures)*

10:00am - 11:30am

Second Parallel Session (FOS)

11:45am - 12:00pm

Invited Lecture III : **Professor Abba Gumel (SSH)** *(Mathematical Models in Health for National Development)*

12:15pm - 1:45pm

Third Parallel Session (FOS)

1:45pm - 2:45pm

Lunch Break

3:00pm - 3:45pm

Invited Lecture IV : **Professor Felix Famoye (SSH)** *(Statistical Inference as a key to Sharpening Policy for National Development)*

4:00pm - 5:30pm

Fourth Parallel Session (FOS)

6:00pm - 7:00pm

Dinner

7:00pm

NMS Annual General Meeting

Friday 26th June, 2015

9:00am - 10:30am

Invited Lecture V : **Professor Charles Chidume (FOS)**

11:00am - 1:00pm

Software Training(FOS)

1:00pm - 2:00pm

Lunch Break

2:00pm - 5:30pm

Software Training (FOS) **Saturday 27th June, 2015** Departure

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A25: COMPUTATIONAL METHODS IN FLUID DYNAMICS**Salihu, O. N.***Department Of Mathematics And Statistics, Federal University Of Technology, Minna.
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Abstract: In this paper, the implicit finite difference schemes for solving two dimensional Navier-Stokes equations has been demonstrated. Different methods such as matrix reduction, diagonalization and flux split schemes are also included in the paper. The method used ensured that the methods are either time accurate or accelerated non-time accurate steady state schemes. Some examples for viscous calculation in this presentation were also given. The numerical algorithm for this presentation is treated as implicit time differencing and local time linearizations. The author has also generalized the curvilinear coordinate transformations system into metric relations and invariants of the transformation in this paper.

A26: MATHEMATICAL MODEL TO STUDY THE EFFECTS OF TREATMENT AND VACCINATION ON THE DYNAMICS OF TUBERCULOSIS IN A VARYING POPULATION**¹ Kimbir, A. R. Ashezua, T. T., Onah, E. S. and Aboiyar, T.***Department of Maths, Stats and Comp. Sci., Federal University of Agriculture, Makurdi;
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Abstract: An extended version of the model by Koriko and Yusuf (2008) is proposed to study the effects of treatment and vaccination on the dynamics of tuberculosis in a varying population. Using the next generation method, the basic reproduction number R_0 is calculated. Furthermore, sensitivity analysis is then performed on the three key parameters of the basic reproduction R_0 . We found out that α (TB instantaneous incidence rate) is the most sensitive parameter and should be targeted by intervention strategies. The disease-free equilibrium state is found to be globally asymptotically stable if R_0 is less than one. This means that TB could be controlled or eradicated under such conditions. Results from numerical experiments show that treatment alone could be an effective method of control/eradication of TB. However, since many people find it difficult to be confined for long periods of treatment, vaccination of the susceptible population could be an alternative control strategy. From these results, it was noted that vaccination and treatment are very useful tools in the control or eradication of TB.

Keywords: Tuberculosis, Disease-free equilibrium, global stability basic reproduction number, threshold parameters.