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.

34th 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	Arrival
Venue	Department of Mathematics
7pm	NMS Council Meeting
Wednesday 24th June,2015	Opening Ceremony Venue

MAIN AUDITORIUM (SSH)

9:00am	Arrival of Participant, Special Guests & Dignitaries10:00am 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, 2015Departure**

A25: COMPUTATIONAL METHODS IN FLUID DYNAMICS

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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 linerarizations. 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

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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.
