

# REPORT ON THE 1<sup>st</sup> CYRIL ONWUMECHILI SCHOOL ON PHYSICS OF GEOMAGNETIC PHENOMENA

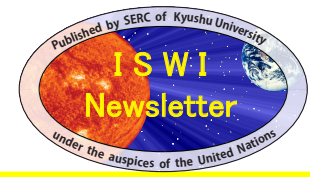
24 - 30 JUNE 2012

Hosted By

The Department of Physics, Federal University of Technology, Akure, FUTA,  
Nigeria

Co-organized by

The Atmospheric and Space Environment Research Network ASPERN Africa, and the Space  
Physics Laboratory, Department of Physics, Federal University of Technology, Akure,  
Nigeria



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## CYRIL ONWUMECHILI SCHOOL ON PHYSICS OF GEOMAGNETIC PHENOMENA



 DEPARTMENT OF PHYSICS,  
FEDERAL UNIVERSITY OF TECHNOLOGY

AKURE / NIGERIA



12 : 06 : 25

Group photo taken on 25<sup>th</sup> of June 2012 immediately after the Opening  
Ceremony

## **BACKGROUND INFORMATION**

Cyril Onwumechili School on Physics of Geomagnetic Phenomena is an initiative aimed at: building capacity in Physics of Geomagnetic phenomena; transfer advanced knowledge and modern data analysis techniques to trainees; and highlighting the outstanding contributions of Professor Cyril Agodi Onwumechili to Physics of Geomagnetic Phenomena. This first School focused on the basics of geomagnetic phenomena and modern techniques in geomagnetic data analysis. This program is expected to serve as a model for capacity building in this field in Africa.

The School was rightly named after the foremost African geomagnetic physicist, Professor Cyril Agodi Onwumechili, who has made significant contribution to the development of Physics of geomagnetic Phenomena. Professor C. A. Onwumechili, who hailed from Inyi (Enugu state, South Eastern part of Nigeria), started his career as academic staff at the University of Ibadan in the 1950s and has over 200 research publications to his credit.

This *1<sup>st</sup> Cyril Onwumechili School on Physics of Geomagnetic Phenomena* was jointly organized by the Atmospheric and Space Environment Research Network ASPERN Africa, and the Space Physics Laboratory of the Department of Physics, Federal University of Technology, Akure, Nigeria. The School was hosted by the Department of Physics, Federal University of Technology, Akure, Nigeria.

## **VENUE AND DATES**

The workshop was held between 24<sup>th</sup> and 30<sup>th</sup> June 2012 at the Department of Physics, Federal University of Technology, Akure, FUTA Nigeria. All lectures and laboratory demonstrations took place at the new Graduate Research Laboratory of the Department of Physics within the University Campus.

## **ACCOMMODATION**

Each of the participants paid for their transportation to the venue of the workshop from their various institutions and also took care of their accommodation. This is unfortunately due to the fact that the organizers could not secure financial support for this school. The LOC assisted in the transportation within the campus and organized tea break through the fund received from the Department.

## **ARRIVAL DATE**

Some of the participants from different parts of the country arrived safely in Akure on Sunday 24<sup>th</sup> June 2012.

## **THE PROGRAMME**

The School was declared open, by the Head of Physics Department, Federal University of Technology, Akure, Dr B. Adeyemi, on Monday 25<sup>th</sup> June 2012. Other guests at the Opening ceremony (see Appendix 1) were: Prof A.Babatunde Rabi, the School Co- Director; Dr A.Y.B. Anifowose, the Head of Department of Remote Sensing and GIS; Dr E. C. Okogbue, the Head of the Department of Meteorology FUTA represented by Mr Akinbobola; Dr D. Arotunpin, of Microbiology Department FUTA; and Dr. E.O Falayi - a Co-Director of the School. The storming citation of Professor Cyril Onwumechili, attached as Appendix 2, was read at the opening ceremony.

Day-to-day activities of the School followed a well structured schedule as reflected in Appendix 3. Detailed report on the various events and lectures are reported in the rapporteur's report labeled as Appendix 4.

The School was brought to a close on Thursday, 28<sup>th</sup> June 2012 due to logistics. However, the participants around Akure neighbourhood stayed till Friday, 29<sup>th</sup> June, 2012 to master the knowledge gained in the school on the use MATLAB soft ware. The presentation of certificates of attendance to all participants was done by the . A sample of the certificate is attached as Appendix 5.

## **SUMMARY OF PARTICIPATION**

38 persons participated in the School; 5 tutors and 33 trainees. In all participants from 10 different parts of the country participated in the school. See the list of participants in Appendix 6. Appendix 7 displayed the collection of pictures by Olugbon Busola of University of Lagos and Olawumi Kaka from Afe Babalola University, Ado-Ekiti.

## **STATES OF PARTICIPANTS**

- |           |          |
|-----------|----------|
| 1. Abuja  | 6. Lagos |
| 2. Ebonyi | 7. Osun  |
| 3. Ekiti  | 8. Ondo  |
| 4. Kebbi  | 9. Ogun  |
| 5. Kaduna | 10. Oyo  |

## **SPONSORSHIP**

The School couldn't get support from the outside. However, the Department of Physics, FUTA provided the tea breaks during the school. The Department also made available her Post Graduate Research laboratory for the lectures, multimedia projectors and other electronics.

## **LOCAL ORGANISING COMMITTEE**

1. Professor Babatunde Rabiou – Convener and Co - Director
2. \* Dr. Elijah. O. Falayi – Co-Director
3. Dr. T, Ewetumo – Rep., Department of Physics
4. Olawale Ramon Bello – Technical Secretary
5. Olawumi Rophiat Kaka – Administrative Secretary

\* Dr Falayi is the Acting Head of Physics Department at the Tai Solarin University of Education, TASUED, Ijagan, Ijebu Ode.

**Report Prepared By:**

**Olawumi Rophiat KAKA**

*Administrative Secretary of the*

*1<sup>st</sup> Cyril Onwumechili School on Physics of Geomagnetic Phenomena*



Prof (Mrs) Ibiyinka A. Fuwape,  
Dean, School of Sciences, FUTA

Group photo taken on Thursday, 28<sup>th</sup> June 2012 immediately after the Closing Ceremony

APPENDIX 1

1<sup>st</sup> CYRIL ONWUMECHILI SCHOOL ON PHYSICS OF GEOMAGNETIC PHENOMENA COSPGP  
24 - 30 JUNE 2012

Department of Physics, Federal University of Technology, Akure, Nigeria,

Opening Program

AGENDA – Day 1 (Monday 25<sup>th</sup> June 2012)

Session 1: Opening Session

- (i) Opening Prayer – 9: 00am – 9: 04am
- (ii) National Anthem - 9:04am – 9: 07am
- (iii) Recognition of Guests - 9:07am – 9: 15am
- (iv) Opening Remarks by Chairperson - 9:15am – 9:25am
- (v) Welcome Address by Dr B. Adeyemi, Ag Head, Dept of Physics, FUTA 9:25 -9:35 am
- (vi) Introducing COSPGP by Dr E. O. Falayi (Co-Director COSPGP) - 9:35am – 9:40am
- (vii) Introduction of School participants and Instructors 9:40 -9:45AM
- (viii)** Contributions of Professor Cyril Agodi Onwumechili - Prof. A. B. Rabiun 9:45 – 10:15am
- (ix) Declaration of School Opened by the Chairperson –10:15-10:25am
- (x) Vote of thanks – Dr T. Ewetumo - 10:25am – 10:27am
- (xi) Closing Prayer – 10:27 – 10:30am
- (xii) National Anthem -
- (xiii) Group photographs
- (xiv) Coffee Break

## APPENDIX 2: BRIEF BIOGRAPHICAL DATA AND CITATION OF PROFESSOR CYRIL AGODI ONWUMECHILI

NAME: Professor Cyril Agodi ONWUMECHILI

FAMILY:

Born 20 January 1932, married Cecilia Bedeaka Onwumechili, (nee Anyadibe).

EDUCATION AND QUALIFICATIONS:

Educated at King's College, Lagos 1944-1949;  
University College, Ibadan, (then a University of London affiliated College), 1949-1957;  
International Institute of Nuclear Science and Engineering, Argonne National Laboratory,  
operated by the University of Chicago, U S A, 1960.

Holds B. Sc. General (London) in Pure and Applied Mathematics and Physics, 1953;  
B. Sc. Special (London) in Physics, 1954;  
Ph.D. (London) in Physics, 1958;  
Diploma (International Institute of Nuclear Science and Engineering, Argonne, Chicago)  
in Administration and Operation of Nuclear Facilities, 1960;  
Hon. D.Sc. (University of Ife), December, 1977;  
Hon. D.Sc. (Enugu State University of Science & Technology), May, 1992; and  
Hon. D.Sc. (University of Nigeria), April 2001.

UNIVERSITY CAREER:

**Worked as Professor in the following Universities:**

University of Ibadan, Nigeria, 1958 – 1966;  
University of Nigeria, Nsukka, Nigeria, 1966 – 1978;  
University of Alaska, Fairbanks, U S A (as Visiting Professor for one year), 1972;  
University of Ife, Nigeria, (now Obafemi Awolowo University), Jan. 1979 – Dec. 1982;  
Anambra State University of Technology, Enugu, Nigeria, Jan. 1983 – Dec. 1986:  
(whose campuses became the current Nnamdi Azikiwe University, Awka and Enugu  
State University of Science and Technology, Enugu).  
University College of the University of Wales, Cardiff, U K (as Professor on Sabbatical  
for one year), 1987 –1988.

Established two and directed four geomagnetic observatories;  
Directed several research projects financed nationally and internationally; and  
Supervised several successful Masters and Doctoral students. Most of them have  
become full Professors (Babatunde Rabi is one of these fortunate individuals).

Attended well over 100 international conferences and read papers in most of them;  
Selected Book publications are listed;  
He was the first Editor-in-Chief of the Nigerian Journal of Science.

Has been Chairman, Director or Member of well over 50 Committees and Boards of  
Universities dealing with academic, administrative, planning, service, and technical matters, etc.

**Has served in the following capacities:**

Head of Department of Physics, for three separate tenures in University of Ibadan and University of Nigeria, Nsukka. 1965-1966, 1966-1970, 1976-1978.  
Dean of the Faculty of Science, for four separate tenures in University of Ibadan and University of Nigeria, Nsukka. 1965-1966, 1970-1971, 1973-1976, 1978.  
Vice Chancellor, University of Ife, Nigeria, Jan. 1979 – Dec. 1982; (now Obafemi Awolowo University, Ile-Ife) and  
Vice Chancellor (President), Anambra State University of Technology, Enugu, Nigeria, Jan. 1983 – Dec. 1986: (when it consisted of Campuses that became the current Enugu State University of Science and Technology, Enugu; and Nnamdi Azikiwe University, Awka; and it gave birth to Campuses that became the current Ebonyi State University, Abakaliki and College of Medicine, Nnewi).

**BOOKS:**

- (1) Onwumechili C.A. 1967. *Geomagnetic Variations in the Equatorial Zone*. Chapter III-2, Volume 1, 83 pages (425 - 507), in: *Physics of Geomagnetic Phenomena*, Edited by Matsushita S. and Campbell W.H., published by Academic Press, New York.
- (2) Onwumechili C.A. 1990. *Cost Effectiveness and Efficiency in African Universities: The Study of the University of Gezira, Sudan*, 52 pages. Consultancy Manuscript sponsored by World Bank, under the Association of African Universities, Accra, Ghana.
- (3) Onwumechili C.A. et al. 1991. *Study on Cost Effectiveness and Efficiency in African Universities: A Synthesis Report*, 91 pages. Published by Association of African Universities, Accra, Ghana
- (4) Onwumechili C.A. 1991. *Reflections on University Administration in Nigeria*. Chapter 1 in “University Administration: the Anambra State University of Technology Approach”, 13 pages. Edited by Dr. F.C. Eze and Professor Pita Ejiofor. ASUTECH Press, 1991.
- (5) Onwumechili C.A. 1993. *Cost Effectiveness and Efficiency in African Universities: Experience in Obafemi Awolowo University, Ife in Nigeria*, 227 pages. Consultancy Manuscript sponsored by Netherlands Government, under the Association of African Universities, Accra, Ghana.
- (6) Onwumechili C.A. 2000. *The 2000 Ahiajoku Lecture. Igbo Enwe Eze? – The Igbo Have No Kings?* 33pages. Published by the Government of Imo State of Nigeria.
- (7) Onwumechili C.A. 1997. *The Equatorial Electrojet*. 632 pages. Gordon & Breach Science Publishers, Amsterdam. Available from Taylor and Francis Group, Cheriton House, North Way, Andover, Hampshire, SP10 5BE, United Kingdom.
- (8) Onwumechili C.A. 2006. *Inyi Home Affairs*. 254 pages. Omo-T Professional Printers, Lagos.
- (9) Onwumechili C.A. 2010. *Coming A Long Way: a Biographical Memoir*. 530 pages. King Printing Company, Lowell, Massachusetts, USA.

## SELECTED NATIONAL ACTIVITIES:

### **Member of the Governing Councils of the following Institutions:**

University of Ibadan, 1967-1968 (but absent on account of War);  
University of Nigeria, Nsukka, 1970-1973 and 1974-1976;  
Advanced College of Education, Uyo, 1975-1976;  
University of Ife, 1979-1982;  
Anambra State University of Technology, Enugu, 1980-1983 and 1983-1986.

### **Member of the following bodies:**

National Sciences Research Council of Nigeria, 1973-1976;  
National Science and Technology Development Agency of Nigeria, 1977-1980; and Panel of Experts that formulated guidelines for a comprehensive and integrated energy policy for Nigeria, 1984.

### **Member of the following Commissions:**

Sixth Form Commission of the National Universities Commission to plan the introduction of Sixth Forms in Nigeria, 1966;  
Chairman of a Panel of Scientists to formulate and advise the East Central State Government on Agricultural Research, 1971;  
Visitation Panel commissioned by the Governor of the Western Region of Nigeria to assess the progress, and formulate plans for the future of University of Ife, 1974;  
Nigerian Energy Commission, 1989-1995.  
Board Member of National Universities Commission 2002 - 2005.

### **Chairman of the following Governing Boards and Councils:**

Board of PRODA, a Federal Industrial R and D Projects Institute, 1974-1978;  
Interim Board of Adeyemi (Advanced) College of Education, Ondo, 1981-1982;  
Board of the Institute of Agricultural Research and Training, Ibadan, 1979-1982;  
Board of Industrial Development Centre, Enugu, 1983-1984; and  
Governing Council of Anambra State University of Technology, Enugu, 1984-1985.

## SELECTED INTERNATIONAL ACTIVITIES

### **Member of the following international bodies:**

Commonwealth Consultative Committee on Space Research, 1961-1966;  
Treasurer, West African Science Association 1961-1965; and  
Manager, Journal of West African Science Association 1962-1967;  
International IQSY Committee 1963-1967, of International Council of Scientific Unions, as representative of Africa;  
Several Committees of International Association of Geomagnetism and Aeronomy, and



International Union of Geodesy and Geophysics, on several occasions;  
International Scientific Programmes Committee for the International Symposia on  
Equatorial Aeronomy, 1972-1990 and 1993-2000.

**Has served in the following capacities:**

Chairman, Panel of Experts from France, Nigeria, Philippines, Sweden, USSR and  
Venezuela to advise Secretary General of United Nations on the Plans and Nuclear  
Capability of South Africa, New York, July-August, 1980.  
Member of the Executive Committee and Board of Trustees of the International Institute  
for Tropical Agriculture (IITA), 1980-1982;  
Member of International Panel of Experts (ACSTD) advising the United Nations on  
Science and Technology for Development, 1981-1983;  
Twice Member of Consultative Panels of Experts to advise UNESCO on Higher  
Education, 1983 and 1984.  
Member of United Nations CSTD Panel of Specialists on Human Resources  
Development for Planning, Management and Implementation of Science and  
Technology in Developing Countries, 1983;  
Vice President of the Association of African Universities, 1984-1989;  
Chairman of the Management Committee of UNESCO's African Network of Scientific  
and Technological Institutions (ANSTI), 1985-1989;  
Chairman of International Commission on Developing Countries for IAGA Sciences,  
1991-1995;  
Chairman, Scientific Committee of "Study Programme on Higher Education  
Management in Africa" by Association of African Universities, 1993 to 2002.

**FOREIGN TRAVELS**

Widely traveled and has sojourned in well over 100 cities in all the continents of the  
world.

**In particular, has extensively toured the following:**

Educational and nuclear installations in Midwestern and Western USA; 1960  
Educational and geophysical institutions in Germany; 1964  
Nuclear and some agricultural institutions in France; 1979 and  
Nuclear reactor installations in USSR; 1974.  
Institutes on Space Research in India, 1991.

**Visited the following Academies of Sciences:**

Royal Society of Great Britain, London, 1979;  
French Academy of Sciences, Paris, 1979;  
Italian Academy of Sciences, Rome, 1982;  
Polish Academy of Sciences, Warsaw, 1982; and  
Bulgarian Academy of Sciences, Sofia, 1986.

**CONSULTANCIES**

Commissioned by UNESCO to give a series of lectures exploring the appropriate areas  
of investigation preparatory to the inauguration of the Equatorial Rocket Launching  
Site at Thumba in Southern India, 1964.

Consultant for three months to the Institute for Space Research (INPE), of the National Research Council of Brazil, Sao Jose dos Campos, to formulate and introduce projects, and train a Brazilian for research in a certain area of Geophysics, 1972.

Consultant for ten weeks to the United Nations Economic Commission for Africa, to formulate and submit a report on the establishment of African Energy Commission (ANEC), 1987.

Consultant to the Commonwealth Science Council, London, to prepare draft guidelines on Technology Assessment titled, “Technology Assessment: Anticipating the Consequences of Technological Choices”, 1988.

Consultant to the Association of African Universities, in various periods of 1989-1991, on a World Bank sponsored project, “Study on Cost Effectiveness and Efficiency in African Universities”, with a view to providing guidelines for the development of policies on Higher Education in Africa.

Consultant to United Nations Economic Commission for Africa on “Experiences in the acquisition and transfer of nuclear science and technology as applied to agricultural production, food processing and preservation”, May-June, 1992.

Consultant to the Association of African Universities, on “Cost Effectiveness and Efficiency in African Universities, Phase II”, sponsored by Netherlands Government, 1993.

Consultant to the Association of African Universities on “Study Programme on Higher Education Management in Africa”, 1993 to 2002.

#### ELECTIONS OF HONOUR

President of the Nigerian Academy of Science, 1979-1981;  
Chartered Physicist (C. Phys.), Great Britain, elected 1986;  
Fellow of British Institute of Physics (F.Inst.P), elected 1969;  
Foundation Fellow of Science Association of Nigeria (F.S.A.N), elected 1974;  
Foundation Fellow of the Nigerian Academy of Science (F.A.S), elected 1977;  
Fellow of New York Academy of Sciences, elected 1982;  
Fellow of the African Academy of Sciences (F.A.A.S), elected 1987;  
Fellow of Third World Academy of Sciences (F.T.W.A.S), elected 1989;  
Foundation Fellow of the Nigerian Institute of Physics, elected 1993; and  
Ahiajoku Lecturer on “Igbo Enwe Eze”, November 2000.

#### BIOGRAPHICAL LISTINGS

Professor Onwumechili’s biography is **listed in about ten Who’s Whos** including:  
“The International Who’s Who”, first in 1986-1987 by Europa Publications;  
“Who’s Who in the World”, first in 1974, by Marquis Publications; and  
“World Who’s Who in Science”, first in 1968, by Marquis Publications.

## Summary

Ladies and gentlemen, you will agree with me that our distinguished scientist is indeed worthy of being recognized with the naming of this school. A two-time former Vice Chancellor at two different Universities. A pioneer Vice Chancellor VC of a university that eventually split into two. An academic professor of professors. A former president of Nigerian Academy of Science.

Here is a man whose resume is storming in nature. He has lived a fruitful life full of academic exploits. Professor C. A. Onwumechili, who hailed from Inyi (Enugu state, South Eastern part of Nigeria), started his career as academic staff at the University of Ibadan in the 1950s and has over 200 research publications to his credit. A patriot who participated actively in the International Geophysical Year IGY (195-1958). He has been an embodiment of empowerment. An epitome of excellence. A true mentor. A flavor of honour. An academic per excellence. An excellent administrator. His name is synonymous with equatorial electrojet EEJ. His contributions have increased our understanding of EEJ. His continuous current distribution enabled the estimation of the parameters of EEJ, counter equatorial electrojet CEJ, Solar Quiet daily Sq, and counter Solar Quiet daily CSq ionospheric currents from ground- and satellite/rocket data. This model which was first published in Nigerian Journal of Science in 1965 and later re-published in 1967 (in Onwumechili C.A. 1967. *Geomagnetic Variations in the Equatorial Zone*. Chapter III-2, Volume 1, 83 pages (425 - 507), in: *Physics of Geomagnetic Phenomena*, Edited by Matsushita S. and Campbell W.H., published by Academic Press, New York.) has continued to be relevant in contemporary research work. For examples, Rigoti et al 2001, Oko et al 1996, Onwumechili and Ezema 1977, Rajaram et al 2002; Yahdav et al 2001; and Rabiou et al 2005, 2008 have all utilized the models to generate parameters of EEJ in American, Indian, Africa and East Asian sectors. He represented Nigeria and Africa at many international meetings/committees right from 1950s.

On records, Onwumechili is the most visible African scientist in geomagnetic field research. He remains the father of this field in Africa. We therefore commission this series of School after him.

Thanks

Read by Professor Babatunde Rabiou on Monday 25<sup>th</sup> June 2012 at the opening ceremony of the **1<sup>st</sup> Cyril Onwumechili School on Physics of Geomagnetic Phenomena**, Federal University of Technology, Akure, FUTA, Nigeria.



## CYRIL ONWUMECHILI SCHOOL ON PHYSICS OF GEOMAGNETIC PHENOMENA

Venue: Department Of Physics, Federal University of Technology, Akure, Nigeria

Dates: 24 - 30 June 2012



	8:30 – 10:00	10:00-10:30	10:30 – Noon	Noon – 1:00	1:00 - 2:30	2:30 – 3:00	3:00-5:00
<b>Day 1:</b> Sunday 24 June 2012	Arrival						
<b>Day 2:</b> Monday 25 June 2012	Tea break	Lunch break	Opening ceremony: Citation of Cyril Onwumechili  & his contribution to Geomagnetic Phenomena	Overview of the School  & Fundamental of Geomagnetism  <b>-ABR-</b>	Physics of Geomagnetic Phenomena  <b>-EOF-</b>	Tea break	Earth's Main Geomagnetic Field  <b>-GMO-</b>
<b>Day 3:</b> Tuesday 26 June 2012			The Earth's Ionosphere  <b>-RSF-</b>	Ionospheric currents and Dynamo Systems  <b>-EOF-</b>	Laboratory I: Geomagnetic Field Measurements  <b>-TE-</b>		Laboratory II: Geomagnetic Data Systems  <b>-ABR-</b>
<b>Day 4:</b> Wednesday 27 June 2012			Geomagnetic Field Variations I - Temporal Variations  <b>-ABR-</b>	Geomagnetic Field Variations II - Spatial Variations  <b>-ABR-</b>	Open /Group Research Discussion  <b>-RSF-</b>		Laboratory III: Spatial Data Analysis  <b>-GMO, ORB-</b>
<b>Day 5:</b> Thursday 28 June 2012			Solar Daily Variation  <b>-ABR-</b>	Equatorial Electrojet  <b>ABR-</b>	Laboratory IV: Geomagnetic Data Analysis  <b>-ABR, ORB-</b>		Laboratory V: Estimation of Equatorial Electrojet  <b>-ABR, ORB-</b>
<b>Day 6:</b> Friday 29 June 2012			Current research trends	Closing ceremony  <b>-ORB-</b>	Excursion: Visit to places of interest in Lagos		
<b>Day 7:</b> Saturday 30 June 2012	Departure						

EOF-Dr E.O Falayi; TE-Dr T. Ewetumo; ABR-Prof. Babatunde Rabi; GMO-Dr G. M. Olayanju; RSF-Dr R.S. Fayose; ORB-O.R Bello

**DAY-TO-DAY REPORT OF VARIOUS EVENTS AT THE CYRIL ONWUMECHILI SCHOOL ON PHYSICS OF GEOMAGNETIC PHENOMENA HOSTED BY THE DEPARTMENT OF PHYSICS, FEDERAL UNIVERSITY OF TECHNOLOGY, AKURE, NIGERIA. 24 - 29 JUNE 2012**



**DAY 0- DAY 1: Sunday, 24<sup>th</sup> June 2012 and Monday, 25<sup>th</sup> June 2012: ARRIVAL**

Some of the participants arrived safely in Akure on Sunday 24<sup>th</sup> June 2012 and they were received by the LOC. Full registration of the participants was done on Monday, 25<sup>th</sup> of June 2012 by the administrative secretary.

**Day 1: Opening Ceremony, Monday 25<sup>th</sup> June 2012:**

The school started by 9:55 hour at Physics Laboratory 1 Oba kekere, FUTA, and was moderated by Mr. Babalola Ogunsua. The opening prayer was said by Dr D. Arotunpin followed by singing of the Nigerian National Anthem. All the invited guests and the lecturers of the Department of Physics were recognised. The chairperson, Dr B. Adeyemi who is also the acting Head of Department, Physics gave the opening remarks. The school Co- Director, Dr E.O Falayi introduced the Cyril Onwumechili School on Physics of Geomagnetic Phenomena and each instructor/participant introduced themselves to the house. Prof A.B. Rabiou who is the director of the school highlighted the contributions of Prof Cyril Agodi Onwumechili to Space Physics after which the school was declared opened by Dr B. Adeyemi. Vote of thanks was given by Dr T. Ewetumo and the closing prayer was said by Ms Olugbon Busola from University of Lagos. Lagos State. Nigeria. The national anthem was recited to end the opening ceremony after which the guests, instructors and the school participants proceeded for a group photograph.

### **Day 1 Lecture, Monday 25<sup>th</sup> June 2012:**

The first lecture was held at Post Graduate Research Laboratory at Obanla, FUTA. Prof. Rabiun opened the lecture section by reading the general information about the school and details of **Prof. Cyril Onwumechili**, he apologised for the inability of the school to provide supports for participants. He advised participants to always acknowledge the original owners of any of the materials that will be presented, and will be given to participants after the school.

He further called for interactions between participants, sharing of views and challenges any one might be facing. "Some participants are PhD/masters holders who are very good and intelligent, so you take no one for granted", he said. He announced the courtesy visit to the Dean of School of Sciences; Prof. Mrs. I.O. Fuwape. He introduced Dr. Gbenga Olayanju, one of the instructors. The section was closed by Dr. E.O Falayi at 13:10 UT and the participants proceeded for the lunch break.

### **Lecture 1; Afternoon Section:**

The section started at 14:32 UT. Prof. Rabiun read Dr. E.O Falayi's citation. Dr. Falayi gave a lecture titled "**Physics of Geomagnetic Phenomena**"

Questions asked;

1. How many days does it take Corona Mass Ejection to reach the Earth? Answer: About 3 days
2. Do geomagnetic storms happen in Nigeria? Answer: It does,

The lecture ended at 15:23 UT.

### **Lecture 2; Afternoon Section:**

Dr. Rufus Sola Fayose moderated the section, starting by reading Dr. G. Olayanju's citation at 15:35 UT. Dr. Olayanju gave a lecture titled "**Earth's Main Geomagnetic Field**". The lecture ended at 16:06 UT.

### **Day 2, Tuesday 26<sup>th</sup> June 2012:**

#### **Lecture 1 Morning Section:**

Opened at 09:21 UT with Dr. Fayose's citation been read by Dr. Falayi. Dr. Fayose a lecture titled "**Earth's Ionosphere**". The section ended at 10:10 UT, 10 minutes break was given.

### **Lecture 2 Morning Section:**

Dr. Falayi's lecture titled "**Earth's Dynamo System**" at 10:45 UT moderated by Dr. Fayose. The lecture ended at 11:26 UT and the participants proceeded for the lunch break.

### **Lecture 1 Afternoon Section:**

The section started at 13:05 UT, moderated by Dr. E.O Falayi, starting by reading Dr. T. Ewetumo's citation. The lecture titled "**Geomagnetic Field Measurement**" focused on the construction of a magnetometer and how to monitor the data collected from it. The lecture ended at 13:52 hour UT and a 30-minutes break was given.

### **Lecture 2 Afternoon Section:**

The section was moderated by Dr. E. O. Falayi, started at 14:26 hour UT. The lecture titled "**Estimation of Equatorial Electrojet**" was delivered by Prof. A. B Rabi.

During the lecture the Professor advised that we must always discuss our results in details. The section was closed at 15:40 hour UT for the day.

### **Day 3, Wednesday 27<sup>th</sup> June 2012:**

The day was opened by Prof. Rabi at 09:35 hour UT by announcing that the school will be brought to a sudden end tomorrow, Thursday 28<sup>th</sup> of June 2012 because of the environmental sanitation exercise in Ondo State which comes up every last Saturday of the month. This is to allow people travelling far distance to be able to leave on Friday 29<sup>th</sup> June 2012 and that certificate will be given tomorrow's evening, 28<sup>th</sup> June 2012.

### **Lecture 1 Morning Section:**

The section started immediately after the announcement without a moderator at 09:42 hour UT. The lecture was continuation of "**Estimation of Equatorial Electrojet**". 17 minutes break was given and we resumed back at 11:30 hour UT.

### **Lecture 1 Afternoon section:**

The section started at 13:40 hour UT with introduction of new participants by Prof. Rabi. He introduced Dr. O. Odo from Physics department, FUTA.

The lecture titled "**Spatial Data Analysis**" Dr. Olayanju started immediately after the introduction, by. It ended at 16:00 hour UT for the day.

## **Day 4, Thursday 28<sup>th</sup> June 2012**

### **Lecture 1, Morning section:**

The class started at 09:30am with topic titled “**Estimation of Equatorial Electrojet Sq**” by Prof. Rabi. It was an interactive lecture with class work was given to the participants on EEJ and Equatorial Electrojet Sq estimations. It was a positive turn out with the results obtained by the participants. The class was able to carry out the exercise successfully by using a MATLAB code to generate the results with beautiful graphs.

After the exercise was the discussion on the “**current research trends**”. The school director, Prof. Rabi started the section by expressing his appreciations to the class. He introduced the new society, African Geospace Society (AGS). He urged participants to register and become a member so as to participate in the activities of the society including voting and selection of the leadership. During the discussion some participants gave their impressions about the school as follows:

**Mr Nzekwe Martins of Yaba College of Technology, Lagos State**, said the school has actually opened his eyes to many things in research. Despite the fact that the school was not supported, it has done really very well. It has linked us up especially the young researchers among us. He urged the younger ones to emulate the senior colleagues. He suggested that whenever we come to schools like this, we should look for ways of distributing problems, especially ones associated with our society and we can even publish it locally or in international journals. He commended Prof. Rabi for his passion and for initiating school like this, thanked him for making it free of charge.

**Mr Ibeh Gabriel of Ebonyi State University (a.k.a the wise man)**. He thanked the LOC for the arrangement put in place, their transportation from their lodge to the venue. He thanked Mr Bello and all the LOC again. He then requested that the school should be made yearly. Expressing his appreciation again, he wanted a better way of disseminating the information about the school by posters pasting in different institutions, emailing, and so on. Talking on the current research trend he said, it can be organised even now. There should be different research groups in the school so that members can be in one or two groups and look for how each group can be funded.

**Mr Ekundayo Olushuyi (M1, FUTA)**. He appreciated Prof. Rabi for his initiation including the Space Research Group, FUTA and wants the network to perform better to enhance good participations, even in supporting school/programme ‘the Cyril Onwumechili School on Physics of Geomagnetic Phenomena’.



**Mr Abass Mustapha of Kebbi State University of Science & Technology.** expressed his appreciation for the school. He said “I must confess this is the very first of this kind in my life, throughout my first degree, masters I have never been in school like this”. He described FUTA as a MATLAB village, referring to, when he came down to Akure after he had travelled round the north to solve a problem using MATLAB without a solution. He said when I got here, I shed tears. I saw that MATLAB is a child’s play and that everyone is using it easily, something that has been a red sea for me. He suggested that the school should be zoned year after year, can even be zoned to Kebbi State University.

**Mr Ali Bashir a 500L student of department of Physics FUTA:** He also expressed satisfaction in the school, asked whether the group is interested in showing space education on TV to popularise it among the children.

**Mr. Babalola Ogunsua, D1 FUTA,** also expressed his satisfaction, suggested that having website, calendar, posters will bring more networking capacity. That sponsors can easily get to know more about us on our website. As participants are going back to their various places, they should be going with posters and calendars.

**The school director’s response, Prof Babatunde Rabi.** The idea of this school came in April and the first person to be contacted was **Prof. Cyril Onwumechili** and he was excited. There had been difficulties in getting supports locally. Hopefully, there will be sponsors for the subsequent ones at least from 2 different organisations.

He also said, there will be better dissemination of the programme in the subsequent ones. He promised subsequent one will be a better place to be. On zoning idea of the school, Professor said it is possible for the school to be on zoning basis. As far as the host institution will be given all it takes; if your university is interested just write us.

On popularising space education, he said, I am aware of ARCSTEE that is into this, funding has been the problem. Professor’s response on current research trend, said research means searching for what others has done before not necessarily new thing. For young people who want to do research, the time to start is now. You must learn to sacrifice when you are young. If you need a particular material and are not free, no body is a monopoly of knowledge, you can still send a mail requesting for it. You will get one of these replies; positive, negative or none. Whichever one you get, don’t give up on your interest, but if you are fortunate enough you might get a positive one.

In Space Research Group we have access to as many as possible materials. Professor warned that we must be very careful in copying people's work. Also warned us of acknowledging software we do not have the licence code because the code will be requested when publishing the work.

He encouraged us to have discussions and establish a good network for ourselves, that it helps a lot, having research colleagues all over the institutions and beyond.

At 12:34 hour UT the class proceeded for lunch break. During the break, Prof Rabiou led the participants from the states outside Ondo State to pay a courtesy visit to the Dean of School of Sciences, Prof Mrs I. A. Fuwape.

### **Lecture 2, Afternoon section:**

At 02:30pm, the lecture titled “**Introduction to Space Weather and its impacts on our daily lives**” was delivered by Prof. Rabiou, the presentation was from Endawoke Yizengaw's power point, Professor's collaborator and friend from Institute for Scientific Research, Boston College, USA. This came to be the last official lecture delivered at the 1<sup>st</sup> Cyril Onwumechili School on Physics of Geomagnetic Phenomena.

### **The Closing Ceremony:**

The closing ceremony was graced by the Dean of School of Sciences, Prof Mrs I. A. Fuwape and the acting Head of Physics Department, Dr B. Adeyemi. Prof Mrs I.A. Fuwape appreciated Prof Rabiou for the initiative. She asked the class if they paid for the school and the class responded that they didn't pay a dime. Prof Mrs I.A. Fuwape responded by saying, such case is very rare with an individual to organise a school like this without any ulterior motives. She appealed to the class to maximise the knowledge gained as this will be her happiness and the school's directors.

The acting Head of Physics Department, Dr B. Adeyemi gave his remarks as well. Some participants expressed appreciation to the School's Director, the instructors on behalf of others and expressed satisfaction with the conduct of the LOC.

Prof A.B. Rabiou also appreciated Prof Mrs I.A. Fuwape, Dr B. Adeyemi, the instructors, the LOC and the participants after which he coordinated the issuance of certificate to participants. Prof Mrs I.O. Fuwape presented the certificate to each participant. The School's technical secretary, Mr O.R. Bello gave the vote of thanks. He thanked, acting Head of Physics Department, Dr B. Adeyemi for the support rendered by providing the fund used in preparing the tea break for the participants and making the Post Graduate Research Laboratory available for the class. He appreciated the School Directors, the instructors and all the participants for making the School a success. He was happy

that the objectives of the School was clearly established. Dr B. Adeyemi gave the closing prayer. The house recited the Nigeria's National Anthem to bring the closing ceremony to an end and proceeded for a group photograph.

After the departure of the guests, the participants went back to the class to collect the soft copies of all the lectures, exchanged addresses and had different parting shots. This was a huge success; we give all the glory to the Almighty.

**Report Prepared By:**

**Jacob Oloketuyi**  
*School Rapporteur*

**Olawumi Rophiat Kaka**  
*School Administrative Secretary*

*Appendix 5*



# Certificate of Participation

**To** ~~ese~~ Tunde Ayarinde

***Participated in the '1<sup>st</sup> Cyril Onwumechili  
School on Physics of Geomagnetic  
Phenomena' held at the Federal University of  
Technology, Akure, FUTA, Nigeria  
24–30 June 2012***

***Dr. Babatunde Adeyemi  
Head, Department of Physics,  
FUTA, Nigeria***

***Dr. Elijah Falayi  
School Co-Director***

***Prof. Babatunde Rabi  
National Coordinator, ISWI Nigeria  
& School Co-Director***

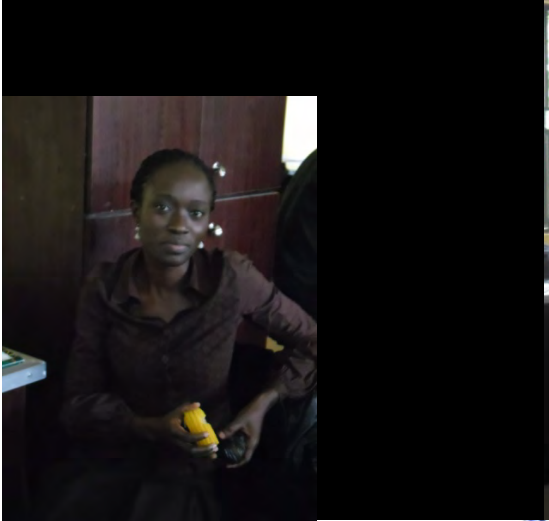
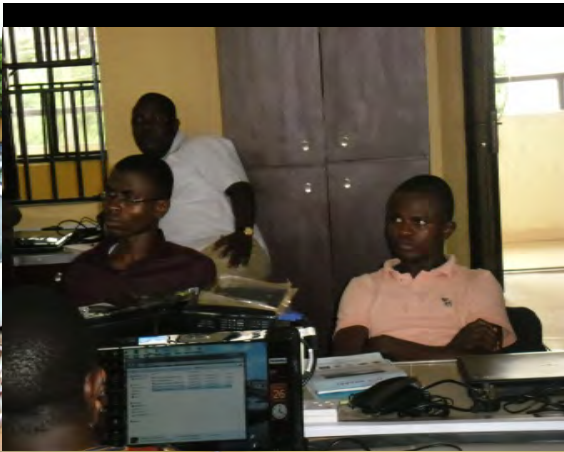
**APPENDIX 6: LIST OF PARTICIPANTS**  
**CYRIL ONWUMECHILI SCHOOL ON PHYSICS OF GEOMAGNETIC PHENOMENA**  
**Department of Physics, Federal University of Technology, Akure, Nigeria**  
**24-30 June 2012**

<b>S/N</b>	<b>Name (Surname First)</b>	<b>Status</b>	<b>Gender</b>	<b>Affiliation</b>	<b>Present status</b>
1	Abe, Oladipo Emmanuel	Trainee	M	Dept. of Physics, Oduduwa Univ., Ipetumoc	PhD candidate
2	Achem Ugbede Christopher	Trainee	M	NASRDA/NDA. Kaduna	MSc student
3	Agoyi Adedeji	Trainee	M	Space Physics Lab, FUTA	MSc student
4	Agunbiade Akinseye S.	Trainee	M	Space Physics Lab, FUTA	MSc student
5	Akinkuade Shedrach T	Trainee	M	Dept of Phy, Fed Polythecnic. Ado-Ekiti	MSc student
6	Akinyemi Gbenga Akinpelumi	Trainee	M	Redeemer's University, Mowe.	MSc student
7	Ayorinde Toyese Tunde	Trainee	M	Defence Industries Corporation of Nigeria,	MSc student
8	Bayode Oladele Philip	Trainee	M	Space Physics Lab, FUTA	MSc student
9	Bello Olawale R	Instructor/Official	M	Space Physics Lab, FUTA	PhD candidate
10	Betiku Olakunle	Trainee	M	Space Physics Lab, FUTA	MSc student
11	Bodunde Oluwaseyi Bamidele	Trainee	M	Space Physics Lab, FUTA	MSc student
12	Dare-Idowu Oluwakemi E	Trainee	F	NASRDA/Space Physics Lab, FUTA	B. TECH Student
13	Folarin Olanike O.	Trainee	F	Space Physics Lab, FUTA	MSc student
14	Ibeh, Gabriel Friday	Trainee	M	Industrial Physics Dept. Ebonyi State Univ.,	MSc student
15	Ibukun James Oladipo	Trainee	M	Adekunle Ajasin Univ, Akoko-Akungba	MSc student
16	Jimoh Oluwaseyi E.	Trainee	M	Earth & Physics Research Lab, OAU	MSc student
17	Mustapha Abass	Trainee	M	Kebbi State University Of Science, And Tec	PhD candidate
18	Nzekwe Nwachuwku Martins	Trainee	M	Yaba College of Tech. Yaba, Lagos/UI. Ibad	PhD candidate
19	Ogunsua Babalola	Trainee	M	Space Physics Lab, FUTA	PhD candidate
20	Olabode Ayomide R.	Trainee	M	Earth & Physics Research Lab, OAU	MSc student
21	Olajide Owoyemi femi	Trainee	M	Space Physics Lab, FUTA	MSc student
22	Olasoji M.O	Trainee	M	Space Physics Lab, FUTA	MSc student
23	Olatunbosun, Lilian G.	Trainee	F	Dept of Phy, Fed Polythecnic. Ado-Ekiti	PhD candidate
24	Olawumi Rophiat Kaka	Trainee/Official	F	ABUAD/Space Physics Lab, FUTA	MSc student
25	Oloketuyi Jacob Oladeji	Trainee	M	Space Physics Lab, FUTA	MSc student
26	Olugbon Busola	Trainee	F	Univ of Lagos. Lagos State	PhD candidate

27	Olumide Odeyemi	Trainee	M	Ekiti State Univ. Ekiti State	PhD candidate
28	Olusegun Christiana F.	Trainee	F	Space Physics Lab, FUTA	MSc holder
29	Olusuyi Ekundayo Oluseyi	Trainee	M	Space Physics Lab, FUTA	MSc student
30	Oluyo, Kayode Sunday	Trainee	M	Yaba College of Tech. Yaba, Lagos/Space P	MSc student
31	Owolabi Oladejo Charles	Trainee	M	Space Physics Lab, FUTA	MSc student
32	Dr Ogolo E.O	Trainee/Official	M	Space Physics Lab, FUTA	Post Doc
33	Dr Falayi Elijah Olukayode	Co-Director/Instr	M	Dept of Phy, Tai Solarin University of Educ	Post Doc
34	Dr Ewetumo Theophilus	Instructor/Officia	M	Dept. of Physics. FUTA	Post Doc
35	Dr Olayanju, Gbenga Moses	Instructor	M	Dept. of Applied Geophysics. FUTA	Post Doc
36	Dr Rufus Sola Fayose	Instructor	<a href="#">M</a>	Dept of Phy, Adekunle Ajasin Univ. Akoko-	Post Doc
37	Prof. Babatunde Rabi	Co-Director/Instr	M	NASRDA/Space Physics Lab, FUTA	Professor

Instructors in yellow

APPENDIX 7



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