

ACADEMIC CURRICULUM

H. Odhiambo Oyoko, Ph.D.,
Pwani University,
P.O. Box 195-80108,
Kilifi
Kenya

Email: h.oyoko@pu.ac.ke
hannington.oyoko@gmail.com

EDUCATION

Ph.D., Theoretical Condensed Matter Physics, 1991
University of Maine, Orono, Maine, USA.

M.S., Physics, 1987
Fairleigh Dickinson University, New Jersey, USA.

B.Sc., Physics and Geology, 1975,
University of Nairobi, Kenya.

EMPLOYMENT HISTORY

- 1. Professor, Department of Physics, Pwani University, Kenya.**
- 2. Chairman, Department of Mathematics and Physical Sciences at Pwani (2009 to 2016).**
- 3. Current Chairman, School of Pure and Applied Sciences Academic Board.**
- 4. I was Vice-Chairman of the Pwani University Promotions and Appraisal Committee (2012-2013)**
- 5. I have been Chairman, Pwani University Renewable Energy Committee**

Courses taught at Pwani University

1. SMA B104 Calculus I (B Undergraduate courses)
2. SMA B200 Calculus II
3. SPH B200 Mechanics II
4. SPH B202 Modern Physics
5. SPH B203 Thermal Physics II
4. SPH B301 Quantum Mechanics I
6. SPH B302 Structure and Properties of Matter
7. SMA B305/405 Complex Analysis I/II
8. SPH 315/401 Classical Electrodynamics I/II
9. SPH B305 Relativistic Mechanics

- 10.SMA B230 Vector Analysis
11. SPH B408 Statistical Mechanics
12. SPH B 410 Quantum Mechanics III
13. SPH B 406 Solid State Physics II
- 14.SPH G 804/807 Quantum Mechanics I/II (G Graduate courses)
- 15.SPH G 806 Classical Electrodynamics II
16. SPH G808 Statistical Mechanics
17. SPH G809/810 Solid State Physics I/II
18. SPH G 805 Mathematical Physics
19. SPH G 802 Classical Mechanics

These are at the level of standard American university courses.

2. University of Durban-Westville/University of KwaZulu-Natal (2003-2005/2005-2008)

Senior Lecturer in Physics (2003-2008), member of University Senate (2003-2005), member of University of KwaZulu-Natal that participated in the founding of the South African National Institute for Theoretical Physics(NiTheP). This is a South African Government Institute that that conducts research in Theoretical Physics and is modeled along the lines of Perimeter Institute(Canada) and Kavli Institute for Theoretical Physics.

Courses taught:

1. PHYS 411T Mathematical Methods of Physics: Honors.
2. PHYS 303T Electromagnetic Theory.
3. PHYS 302 T Quantum Mechanics.
4. PHYS 202 W2 Vibrations and Waves.
5. PHYS 162 W2-Oscillations, Waves, Atomic and Nuclear Physics.
6. SEN 121 S Physics for engineering students.
7. PHYS 131 and PHYS 132 Physics for Health Science and Agriculture Students.
8. PHYS 162 Chemical Engineering Physics.
9. PHYS 332 High Energy Particle Physics.
10. PHYS 195 Augmented Physics designed for students who are Under prepared for University-level studies.

3. University of Swaziland (1998-2003)

Senior Lecturer in Physics

Courses taught:

1. P331 Third Year Electromagnetic Theory I.
2. P342 Third Year Quantum Mechanics I.
3. P421 Fourth Year Solid State Physics I.
4. P422 Fourth Year Solid State Physics II.
5. P472 Fourth Year Electromagnetic Theory II.

**4. University of Zululand, 1997-1998.
On sabbatical leave.**

5. University of Nairobi (1991-1997)

Senior Lecturer in Physics

Courses taught:

1. Quantum Mechanics at B.S., M.Sc. levels.
2. Classical Mechanics at B.S., M.Sc. levels.
3. Classical Electrodynamics at B.S., M.Sc. levels.
4. Statistical Mechanics at B.S., M.Sc. levels.
5. Mathematical Physics at B.S., M.Sc. levels.
6. Solid State Physics at B.S., M.Sc. levels.
7. Many-Body Theory at M.Sc. levels.
8. Quantum Field Theory at M.Sc. level.
9. Laser Physics at B.S. level
10. First Year Physics Laboratory.

**Adjunct faculty at United States International University-Africa,
Nairobi, 1992-1997**

Courses taught:

1. Pre-University Mathematics. This served as remedial course for students with deficient mathematics background to enable them meet university admission requirements.
2. Third Year Probability and Statistics.

Graduate Teaching Assistant, 1988-1991

University of Maine at Orono, Maine
Student and teaching assistant.

Graduate Teaching Assistant, 1985-1986

Fairleigh Dickinson University, New Jersey
Student and teaching assistant.

Military Service, 1975-1983

Professional Membership:

1. American Physical Society (Expired)
2. South African Institute of Physics
2. Sigma Xi (Expired)
3. Sigma Pi Sigma Honor society

LIST OF PUBLICATION:

1. H. Odhiambo Oyoko, N. Porrás-Montenegro, S. Y. Lopez, and C. A. Duque, Comparative study of hydrostatic pressure and temperature effects on impurity-related optical properties in single and double $GaAs - Ga_{1-x}Al_xAs$ quantum wells, Phys. Stat. Sol. (c) **4**, No. 2, 298-300 (2007).
2. H. Odhiambo Oyoko, C.A. Duque and N. Porrás-Montenegro, Theoretical study of the effect of applied stress on the binding energy of a donor impurity in GaAs quantum well dot within an infinite potential barrier, Ind. J. Pure & App. Phys. **42**,908-911 (2004).
3. H. Odhiambo Oyoko, Effect of Uniaxial Stress on the Density of Shallow Donor Impurities in GaAs Quantum Wells , Physica Scripta. Vol. **66**, 94-96, (2002).
4. C. A. Duque, N. Porrás-Montenegro and H. O. Oyoko, Shallow donor impurities in $GaAs - GaAlAs$ Quantum Dots: The Uniaxial Stress and Temperature Dependencies, Revista Colombiana di Fisica, 34, No.1, 17-20 (2002).
5. H. O.Oyoko, C.A. Duque, N. Porrás-Montenegro, Uniaxial stress dependence of the binding energy of shallow donor impurities in GaAs-(Ga,Al)As quantum dots, J. Appl. Phys. **90**, 819-823 (2001).
6. H. Odhiambo Oyoko, Theoretical study of effect of spatial dielectric function on binding energy of donor impurity located on varying positions along the z-axis of a GaAs quantum well dot of circular x-section, Ind. J. Pure & Appl. Phys. **39**, 467-470 (2001).
7. H. Odhiambo Oyoko, Effect of Hermanson's spatial dielectric function on donor impurity binding energy in a cylindrical cross-section GaAs/GaAlAs quantum well wire of in finite length, Ind. J. Pure & Appl. Phys. **38**, 512 (2000).

8. H. Odhiambo Oyoko, Binding energy of the first excited state non-hydrogenic donor impurity in a $GaAs/Ga_{1-x}Al_xAs$ quantum well wire of circular x-section and infinite length, Proc. Ind. Nat. Sci. Acad. **63**, A. No. 6, 489-493, (1997).

9. H. Odhiambo Oyoko, Proc. Joint KPS/ANSTI Conf. Sept. 1994.

10. P. Csavinszky and H. O. Oyoko, Binding energies of on-axis hydrogenic and non-hydrogenic donors in $GaAs/Ga_{1-x}Al_xAs$, J. Math. Chem. **9**, 197-206 (1992).

11. P. Csavinszky and H. O. Oyoko, Binding energy of on-axis hydrogenic and non-hydrogenic donors in $GaAs/Ga_{1-x}Al_xAs$ quantum well wires of circular cross-section, Phys. Rev. B **43**, 9262 (1991).

CONFERENCE ABSTRACTS:

1. H. O. Oyoko, Bulletin of the APS **36**, F13, 2040 (1991).

2. H. O. Oyoko, Bulletin of the APS **36**, F 1 2, 2040 (1991).

3. H. O. Oyoko, Bulletin of the APS **35**, 1546 (1990).

LIST OF CONFERENCE PRESENTATIONS:

1. 48th South African Institute of Physics Annual Conf., Stellenbosch, SA, 2003, "Theoretical study of the effect of uniaxial stress on the binding energy of shallow monovalent donor impurity in GaAs quantum well dot of square cross-section".

2. International KPS/Ansti Conference, September 1994, Nairobi, Kenya, " Theoretical study of the binding energy of a hydrogenic donor impurity in a GaAs/GaAlAs quantum well wire of cylindrical cross-section."

3. H. O. Oyoko, Third Atlantic Chemistry Symposium, Umaine, Orono, May 1990

LATEST SEMINARS:

1. "Theoretical study of the effect of uniaxial stress on the density of impurity states (DOS) in a GaAs quantum well dot (QWD)". June 5, 2005, UDW, Physics Department.

2. "Effect of Uniaxial Stress and Temperature on the donor Impurity Binding Energy and Density of Impurity States in GaAs/GaAlAs QW", UKZN, Westville Campus, November 2007.

VISITS TO RESEARCH INSTITUTES:

1. 9/1996-12/1996: Regular Research Associate, International Center for Theoretical Physics, Trieste, Italy.

2. 6/1999-8/1999: Regular Research Associate, Abdus Salam International Center for Theoretical Physics.

SUPERVISION OF RESEARCH STUDENTS:

I have supervised several M.S. students over the years many of whom went on to successfully pursue Ph.D. at other Universities in the US and Britain. I was an independent examiner of Ph.D. dissertation of Mr. (now Dr) Mosomi in the School of Physics at University of KwaZulu-Natal.

I was also an external examiner for M.Sc. Theses for Department of Physics, University of Zululand for the years 2006/2008.

CURRENT RESEARCH ACTIVITIES:

1. I am currently working on the computation of photoionization cross-section of a donor impurity in its first excited state in a quantum well.
2. I have three graduate students working on their thesis research for M.S. degree (two) and Ph.D. (one).

REFERENCES:

1. Dr. Thomas Baluku,
Chairman, Physics Department,
Pwani University,
P.O. Box 195-80108,
Kilifi,
Kenya.
Email: t.baluku@pu.ac.ke
2. Dr. Fredrick Mutunga,
Department of Chemistry,
Pwani University,
P.O. Box 195-80108,
Kilifi, KENYA
Email: fredrick.mutunga@gmail.com

3. Dr. Joseph Olwendo,
Department of Physics,
Pwani University,
P.O. Box 195-80108,
Kilifi,
Kenya.
j.olwendo@pu.ac.ke

4. Prof. J. O. Afullo,
School of Electrical, Electronic and Computer Engineering,
University of KwaZulu-Natal,
Private Bag X54001,
Durban 4000.
Phone: +27 (0) 31 260 2713
Email: Afullo@ukzn.ac.za

