

# Dr. Thomas Kisandi Baluku (Curriculum Vitae)

Male, of Ugandan nationality

Married

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Senior Lecturer & Chair, Department of Physics,  
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Pwani University  
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Kenya

## Education

2011	<b>University of KwaZulu-Natal</b> <i>Ph.D., (Theoretical) Plasma Physics</i> <ul style="list-style-type: none"><li>• Research topic : "Waves and Instabilities in Space Plasmas : Linear and Nonlinear Waves in Space Plasmas"</li><li>• Advisor : Prof. Manfred Hellberg</li><li>• Assistant Advisor : Prof. Richard Mace</li></ul>	<b>Durban, South Africa</b>
2007	<b>University of KwaZulu-Natal</b> <i>M.Sc., Astrophysics and Space Science</i> Major : Plasma Physics	<b>Durban, South Africa</b>
2004	<b>University of Cape Town</b> <i>B.Sc. Hons., Astrophysics and Space Science</i>	<b>Cape Town, S. Africa</b>
2002	<b>Mbarara University of Science and Technology</b> <i>B.Sc, Science Education (Physics and Mathematics)</i> Major : Physics	<b>Mbarara, Uganda</b>

## Teaching Experience

- 2012–To date    **Pwani University**    **Kilifi, Kenya**  
*Teaching Postgraduate and Undergraduate Physics modules : Classical Electrodynamics, Classical Mechanics, Quantum Mechanics, Thermal Physics, Statistical Mechanics, Modern Physics and Plasma Physics, among others.*
- 2010–2011 ;    **Mbarara University of Science and Technology**    **Mbarara, Uganda**  
2007 ;  
2002-2003    *Tutored and taught various undergraduate Physics units ; Supervised third year physics projects (in form of short dissertations) and undergraduate student-teachers on school practice.*
- 2005–2010    **University of KwaZulu-Natal**    **Durban, S. Africa**  
*Demonstrated first year Physics Practicals ; Taught and tutored various first year Physics modules, including, Electromagnetism and Modern Physics for Life Sciences, Waves and Oscillations, etc.*

## Research Experience

### Publications

1. **T. K. Baluku** and M. A. Hellberg, Dust acoustic solitons in plasmas with kappa-distributed electrons and/or ions, *Physics of Plasmas*, **15** 123705 (2008)
2. **T. K. Baluku**, MA Hellberg and RL Mace, *Solitons in dusty plasmas with positive dust grains*, *Physics of Plasmas*, **15** 033701, 2008
3. M. A. Hellberg, R. L. Mace, **T. K. Baluku**, I. Kourakis and N. S. Saini, Comment on "Mathematical and physical aspects of Kappa velocity distribution" [*Phys. Plasmas* 14, 110702 (2007)], *Physics of Plasmas*, **16** 094701 (2009)
4. **T. K. Baluku**, M. A. Hellberg, I. Kourakis and S. N. Saini, Dust ion acoustic solitons in a plasma with kappa distributed electrons, *Physics of Plasmas*, **17** 053702 (2010)
5. **T. K. Baluku**, M. A. Hellberg and F. Verheest, New light on ion acoustic solitons in a plasma with two temperature electrons, *Europhysics Letters* **91** 15001 (2010)
6. M. A. Hellberg, **T. K. Baluku** and F. Verheest, Acoustic Solitary Waves and Sagdeev Potential Triple Roots, *NEW FRONTIERS IN ADVANCED PLASMA PHYSICS, AIP Conference Proceedings*, **1306** 50-60 (2010)
7. **T. K. Baluku**, M. A. Hellberg and R. Mace, Electron-acoustic waves in double-kappa plasmas : Application to Saturn's magnetosphere, *Journal of Geophysical Research*, **116** A04227 (2011)
8. **T. K. Baluku** and M. A. Hellberg, Ion acoustic solitary waves in an electron-positron-ion plasma with nonthermal electrons, *Plasma Physics and Controlled Fusion*, **53** 095007 (2011) *Physics of Plasmas*
9. **T. K. Baluku** and M. A. Hellberg, Ion acoustic solitons in a plasma with two-temperature kappa distributed electrons, *Physics of Plasmas*, **19** 012106 (2012)
10. F. Verheest, M. A. Hellberg and **T. K. Baluku**, Arbitrary amplitude ion-acoustic soliton coexistence and polarity in a plasma with two ion species, *Physics of Plasmas*, **19** 032305, (2012)
11. O. J. Olwendo, **T. K. Baluku**, P. Baki, P. J. Cilliers, C. Mito and P. Doherty, Low latitude ionospheric scintillation and zonal irregularity drifts observed with GPS-SCINDA system and closely spaced VHF receivers in Kenya, *Advances in Space Research*, **51** 1715 (2013)
12. M. A. Hellberg, **T. K. Baluku**, F. Verheest and I. Kourakis, Dust-acoustic supersolitons in a three-species dusty plasma with kappa distributions, *Journal of Plasma Physics*, **79**(6) 1039 (2013)
13. **T. K. Baluku** and M. A. Hellberg, Kinetic theory of dust ion acoustic waves in a kappa-distributed plasma, *Submitted to Physics of Plasma*, **22**(8) 10.1063 (2015)

## Conferences and Workshops

1. Ghent, Belgium, 27–29 September, 2006 : Oral presentation at The 3rd Flanders-South Africa Workshop on Space Plasma Physics
2. Ponta Delgada, Azores, Portugal, 18–23 May, 2008 : Poster presentation at The 5th International Conference of the Physics of Dusty Plasmas (ICPDP5)
3. UKZN, Durban Campus, 6–10 July, 2009 : The 54th South African Institute of Physics (SAIP) Conference
4. Trieste, Italy, 10–28 Aug, 2009 : Summer College on Plasma Physics held at the International Center for Theoretical Physics (ICTP)
5. Santiago, Chile, 8–13 Aug, 2010 : The International Conference on Plasma Physics (ICPP)
6. Garmisch-Partenkirchen, Germany, 15–20 May, 2011 : The 6th International Conference on the Physics of Dusty Plasmas (ICPDP6)
7. Stockholm, Sweden, 02–06 July, 2012 : The 39th EPS (European Physical Society Conference on Plasma Physics) and the 16th ICPP (International Congress on Plasma Physics)
8. Durban, South Africa, Three week's Research visit to the School of Chemistry and Physics of the University of KwaZulu-Natal, Private Bag X54001, Durban South Africa, 4000. Worked with Prof. M A Hellberg : 16 June –04 July, 2014

## Students supervision

- Successfully co-supervised Mr. Joseph Ouko Olwendo for his Ph.D thesis, titled "Characterization of ionospheric dynamics over the East African dip equatorial region using GPS-derived Total Electron Content". He will graduate in September, 2015.

## Other Responsibilities

1. Chairman, Pwani University Board of Survey (Appointed 17th April 2015)
2. Pwani University Procurement Committee member (since 2013)
3. Chair, Departmental Committee of School of Graduate Studies, DEMAPS, Pwani University (since 2012)
4. Member of the Pwani University Library Committee, representing DEMAPS
5. Member of the Departmental Curriculum Committee (Since 2012)
6. Acting Chair of Department, DEMAPS (on several occasions) when the COD is on official leave.

## Computer Skills

OS	Windows, Linux
Programming	Fortran 77/90, Mathematica, Matlab
/Scripting	L <sup>A</sup> T <sub>E</sub> X and Word processing

## Honors, Awards, and Fellowships

2010	Best (theoretical) poster presentation at the ICPP conference in Santiago, Chile
2004 – 2010	NASSP Scholarship (and bursaries) for Honours, Masters and Ph.D.
2007 – 2010	NRF Grand holder doctoral bursary, nominated by Prof. MA Hellberg, UKZN, Durban
2009	University of KwaZulu-Natal, Graduate bursary
2005	University of Cape Town, Graduate bursary
1998 – 2001	Ugandan Government – Undergraduate Government Sponsorship

## Referees

1. Professor Gabriel Gona Katana  
Department of Mathematics and Physical Sciences,  
Pwani University,  
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Kilifi 80108, Kenya  
Email : g.katana@pu.ac.ke
2. Professor Thomas Thoruwa  
Department of Mathematics and Physical Sciences,  
Pwani University,  
P. O. Box 195,  
Kilifi 80108, Kenya  
Email : t.thoruwa@pu.ac.ke
3. Professor Manfred A. Hellberg  
School of Chemistry and Physics, University of KwaZulu-Natal,  
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Durban 4000, South Africa,  
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