CURRICULUM VITAE

CIVIL STATUS AND ADDRESS

Name:**Mr KITIO KWUIMY Cédrick Aurélien,**
Born on the 11 August 1978 at Penja, Cameroon
Cameroonian, unmarried without child.
Laboratory of Modelling and Simulation in Engineering and Biological Physics,
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ACADEMIC TRAINING COURSE

- **Diploma:**

2004 until now: Ph.D. student in the Department of Physics, Faculty of Science, University of Yaoundé I, Cameroon. Option: M**odelling and simulation in engineering.**

2003-2004: Diploma with Thesis ''D.E.A'' of Physics, Department of Physics, Faculty of Science, University of Yaoundé I, Cameroon. Option**: Mechanics.** Grade: **Very Good.**

2001-2003: Master's Degree in Physics (MS.c), Department of Physics, Faculty of Science, University of Yaoundé I, Cameroon. Option**: MECHANICS.** Grade: **Fairly Good.**

1997-2001: Bachelor's Degree Diploma of Physics, Department of Physics, Faculty of Science, University of Dschang, Cameroon. Grade**: Fairly Good.**

1996-1997: **G.C.E advanced level,** Government Secondary school of Mbanga, Cameroon. Grade**: Fair.**

- **Scientific Dissertations:**

Since 2004: - PhD thesis under the supervision of **Prof Woafo Paul. Title: Modeling, Simulation of self-sustained electromechanical systems with flexible arm.**

2003-2004: - Thesis of Diploma **''DEA''** under the supervision of **Prof Woafo Paul.** Title: **Dynamics and optimisation of electromechanical control of beam vibration under a ϕ^4 mono stable potential: Analytical treatment and finite differences simulation. Major courses included**

MODELIZATION AND THEORY OF CONTROL

- Social and ecological models
- Theory of war (Richardson and Lanchester mode)
- Predator – prey systems (Lotka Volterra, Rosenzenweig – MacArthur model, models with variables coefficients, diffusion models).

NUMERICAL METHODS

- Finite differences methods and stability of discretization scheme.
- Burgers equations
- Nonlinear wave equations: Klein-Gordon and Sine-Gordon equations, nonlinear Schrödinger equation, Korteveg and de vries equation.
- Variational and weight residual methods (collocation, Galerkine, least squares, Riz method)
- Finite elements method: general formulation, finite elements solution of partial equations, application in structural and fluid mechanics

DYNAMICAL SYSTEMS AND CHAOS

- Conservative and non conservative systems.
- Approximation methods for non-linear vibration problems.
- Notion of bifurcation.
- Methods of analysis of dynamical systems: stability, Fourier transformed, power and frequency spectra, Poincaré section.
- Temporal chaos: definition strange attractor appearance of chaos.
- Characterization of a chaotic behaviour (Lyapunov exponents, bifurcation diagram, Poincaré section Fourier spectra,...)

NONLINEAR EXCITATION AND COHERANT STRUTURES

- Concepts of solitary wave and soliton;

- Various types of solitons;
- Non-linear Klein-Gordon models (Sine-Gordon and kinks)
- Solitons in Josephson junctions;
- Domain-walls in ferro-electricity.
- Soliton in non-linear electrical lines (Korteveg and de vries equation, non-linear Schrödinger equation).
- Solitons in atomic and molecular physics.
- Soliton in biological systems.

NONLINEAR DYNAMICS OF CONTINUOUS SYSTEMS

- Nonlinear dynamics of flexible beam under phi4 and phi6 potential.
- Nonlinear dynamics of plate.
- Active control of vibration (feed back control model: Electromechanical, piezoelectric and sandwich control).

RHEOLOGY OF MATERIALS

- Macromolecular structure (natures, artificial cohesion force, polymerisation, polycondensation);
- Architecture of polymeric chains
- Dynamical behaviour of polymeric chains

NUMERICAL METHODS

- Numerical methods for differential integral equations
- Numerical method for algebraic linear and non-linear equations
- Numerical methods for partial differential equations

QUANTUN MECHANICS

- Group theory
- Kinetic momentum, electron spin, Clebsh-Gordon coefficients
- Theory of perturbation
- Stark and Zeemann effects
- Systems of identical particles

DYMANICS OF THE LATTICES

- One dimensional lattices
- Atomic lattices and acoustic modes
- Electric lattices and non-linear mono inductance line
- Tree-phase electric lattice – mechanical analogy

ELASTICITY AND PLASTICITY

- Stress-strain in continuum, energy of deformation
- Elastoplastic problems, equilibrium conditions of Beltrami, equilibrium conditions of Lame and Clapeyron
- Problems of thermo elasticity
- Energetic and variational methods

ACOUSTICS

- Mechanical production of sound
- Dynamics of the beams
- Vibrating membranes
- Sound in tubes
- Electromechanical transducers

AUTOMATIC SYSTEMS

- Hydraulic systems
- Pneumatic systems
- Thermal systems
- Electric and electronic components

ANALYTICAL MECHANICS

- Method of power in structural mechanics
- Holonomic and non-holonomic systems
- Stability (Lyapunov function, Lejeune-Dirichlet theorem)
- Hamilton-Jacobi equations
- Canonical transformations
- Variational principle.

FIELD OF RESEARCH

Nonlinear Physics, nonlinear modelling, active control of vibration, numerical and experimental Simulations of real physical systems with applications in NEMS/MEMS/MaEMS. Nonlinearities in Biological system and social science.

PUBLICATIONS IN INTERNATIONAL JOURNALS

1 - **C.A. Kitio Kwuimy**, B. R. Nana Nbjendjo and P. Woafo "*Dynamics and optimization of electromechanical control of beam vibrations: Analytical method and finite differences simulations*" , Journal of Sound and Vibration 298, Issue 1-2, p. 180-193 (2006).

2**- C.A. Kitio Kwuimy**, and P. Woafo "*Dynamics of a self-sustained electromechanical system with flexible arm and cubic coupling*" Communications in Nonlinear Science and Numerical Simulation 12(8) 1504-1517 (2007)

3- **C.A. Kitio Kwuimy**, and P. Woafo "*Dynamics and synchronization of self sustained electromechanical systems with flexible arm*" Nonlinear Dynamics (DOI 10.1007/s11071-007-9308-0).

4- **C.A. Kitio Kwuimy**, B nana and P Woafo, *Experimental study of a self-sustained electromechanical device*. Journal of Sound and Vibration (submitted) (2007).

5- **C.A. Kitio Kwuimy**, and P. Woafo "*Modelling and dynamics of a self-sustained electrostatic MEMS*" Journal of Computational and Nonlinear Dynamics (Submitted) (2008).

AFFILIATION

1- Member of the **Cameroon Physical Society** (CPS).
2- Member of the **World Academy of Young Scientist** (WAYS).

PARTICIPATION OF SEMINARS, SCHOOLS OR CONFERENCES

1- March 28–April 03, 2006 : Schools on

- ***School on modelling of transcriptional regulation networks.***
- ***School on modelling of the onset of virulence of a pectinolytic bacteria***

➢ ***School on linear response of chaotic systems and transmission of signals in a dynamical network***

at the Laboratory of Nonlinear Modelling and Simulation in Engineering and Biological Physics, University of Yaounde by **Prof. Jacques Alexandre Sepulchre of de "Institut Non linéaire de Nice", France.**

2- April 19, 2006, Schools on ***nanosystems and carbone nanotube in telecommunication network*** at the Laboratory of Nonlinear Modelling and Simulation in Engineering and Biological Physics, University of Yaounde by **Prof. Esidor NTSOENZOK of "Université d'Orléans" and "Centre d'Etude et de Recherche par Irradiation et leurs Applications, CNRS", Orléans, France.**

3- October 20 2007 to October 26 2007. Third edition of the **COPROMAPH International school**, in Benin. Organized by **International Chair in Mathematical Physics and Application (ICMPA).**

4- October 27 2007 to November 02 2007, Fifth edition of the **COPROMAPH International workshop** in Benin. Organized by **International Chair in Mathematical Physics and Application (ICMPA).**

5- March 1 2008 to March 3 2008, First edition of the workshop series on "**Capacity Building of Young Scientists in Developing Countries**", organize by the **World Academy of Young Scientist (WAYS), Cape Town South Africa**

❖ **COLLABORATORS AND REFERENCES**

- **Prof Woafo Paul**, University of Yaounde I, Cameroon,
- **Prof Chabi Orou,** University of Abomey Calavi, Benin,
- **Prof Albert Luo**, Southern Illinois University, United States of America,
- **Prof Kofane Timoleon Crepin**, University of Yaounde I, Cameroon,
- **Prof Fai Cornelus** , University of Dschang, Cameroon,
- **Dr Kenfack Anatole**, Max Planck institute of Physics, Germany

❖ **PRACTICAL EXPERIENCES**

Since October 2006: UNIVERSITY of Yaoundé 1, Cameroon. ***Research and Teaching Assistance.***

2004-2005 and 2005-2006: **UNIVERSITY of Yaoundé 1**, Cameroon.

Tutorials Assistance under the supervision of Prof. Woafo Paul. Course: Acoustics and vibrations of mechanical systems

2005-2006: **UNIVERSITY of Yaoundé I**

Practical and Tutorials Teachings Assistance

2002-2004: Governmental Organisation Youth Information Center (YIC), Cameroon.

Tutorials teachings assistance in computer science.

1998-2000: University of Dschang, Cameroon. **General Secretary of The Physics Club.**

❖ **HOBBY AND DISTRACTION**

Web master (www.lamsebp.org, www.scpweb.org)

Humanitarian activities

Sport

Cinema

Yaoundé, 27 January 2008

KITIO KWUIMY CEDRICK AURELIEN