

CURRICULUM VITAE

Gaétan FAUTSO KUIATE, PhD

Laboratory of Modelling and Simulation in Engineering and Biological Physics
University of Yaoundé 1, Faculty of Science, P.O BOX 812 Yaoundé, Cameroon

Permanent address: PO BOX 8047 Yaoundé, Cameroon

Marital status: fiancé (one child)

Phone (cell): (237) 77 25 30 75

Email: fautsokuiate@yahoo.co.uk, fautsokuiate@lamsebp.org

RESEARCH INTERESTS:

- Current-voltage singularities in Josephson junctions made devices
- Synchronization of coupled systems
- Calcium wave oscillations in cells

EDUCATION:

Feb. 2004 - Dec. 2007: PhD student Laboratory of Mechanics, Faculty of Science, University of Yaoundé I, Cameroon.

2003 – 2004: Post graduate student (DEA), University of Yaoundé I, Cameroon.

Major courses included:

MODELISATION AND CONTROL THEORY

- 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, Korteweg de Vries equation;
- Variational and weight residual methods (collocation, Galerkin, 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 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, etc.).

NONLINEAR EXCITATION AND COHERENT STRUCTURES

- Concept of solitary wave and soliton;
- Various types of solitons;
- Non-linear Klein-Gordon models (Sine-Gordon and kinks);
- Soliton in Josephson junctions;
- Domain-walls in ferro-electricity;

- Soliton in non-linear electrical lines (Korteweg and de Vries equation, non-linear Schrödinger equation);
- Soliton in atomic and molecular physics;
- Soliton in biological systems.

MECHANICS OF RUPTURE

- Generalities on the mechanics of rupture;
- Linear elasticity and analysis of fissure;
- Plastoelastic analysis of fissure;

Sept 2002 – sept 2003: Master (Maitrise) degree in mechanics, University of Yaoundé, Cameroon.

Major courses included:

NUMERICAL METHODS

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

QUANTUM MECHANICS

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

DYNAMICS OF THE LATTICES

- One dimensional lattice;
- 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;

- Fragile elastic materials;
- Elastoplastic materials.

RHEOLOGY OF MATERIALS

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

- Elastoplastic problems, equilibrium conditions of Beltrami, equilibrium conditions of Lamé and Clapeyron;
- Problems on 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.

Sept 1998 – sept 2002, Bachelor degree in mechanics, University of Yaoundé, Cameroon

TEACHING EXPERIENCE:

From 2004 – 2007: Practical and Tutorial assistant, Department of Physics, faculty of Science, University of Yaounde I.

SEMINARS AND SCHOOLS

April 19, 2006: School on Protons and rare gas implantation in semi-conductors and insulators: functional nanocavities and their application (University of Yaoundé 1, Faculty of science, Department of physics). By Professor **Esidor NTSOENZOK**, Université d'Orléans and CNRS, Orléans, France.

March 2006: school on modelling of transcriptional regulation networks (university of Yaoundé 1, Faculty of science, Department of Physics), by Professor **Jacques Alexandre Sepulchre**, Institut Non linéaire de Nice, France.

March 2006: school on modelling of the onset of virulence of a pectinolytic bacteria (University of Yaoundé 1, Faculty of science, Department of physics), by Professor **Jacques Alexandre Sepulchre**, Institut Non linéaire de Nice, France.

March 2006: School on linear response of chaotic systems and transmission of signals in a dynamical network (University of Yaoundé 1, Faculty of science, Department of physics), by Professor **Jacques Alexandre Sepulchre**, Institut Non linéaire de Nice, France.

COLLABORATORS

- **Professor Paul WOAFO**, Laboratory of Modelling and Simulation in Engineering and Biological Physics, Faculty of Science, University of Yaoundé 1
- **Professor Timoléon Crépin KOFANE**, Laboratory of Mechanics, Faculty of Science, University of Yaoundé 1
- **Professor Giovanni Filatrella**, Material Science Laboratory and Biological Science Department, University of Sannio, Italy
- **Doctor Samuel NOUBISSIE**, Institut of Technologie, Bandjoun

PUBLICATIONS:

- *Fiske and satellite steps in a twofold Josephson junction*, **G. FAUTSO KUIATE** and P. WOAFO, *Physica scripta* **71**, 556, (2005)
- *I-V characteristics of an array of discrete Josephson junction and effect localised defects*, **G. FAUTSO KUIATE** and P.WOAFO, *Physica C* **440**, 59(2006)

THESIS:

- *Optimization of high-frequency generators using Josephson junctions*, PhD thesis (2007)
- *Oscillateurs à fluxons à plusieurs lignes*, Postgraduate thesis, (2003)