

Cameroon Physical Society



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PROGRAMME

*2nd International Conference
on*

“LOW COST HIGH PHYSICS AND APPROPRIATE SOLUTIONS TO
REAL LIFE PROBLEMS IN DEVELOPING COUNTRIES”

**6 – 8 December 2011
Yaounde, Cameroon**

Organised by
Cameroon Physical Society

With the support of



The Abdus Salam
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Physics



European
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UYI - FAC SCIENCES

Tuesday, 06 December 2011 (Semiconductor lasers, optics and applications)

08 :15 – 09 :00 Registration of participants

Session 1 - Semiconductor laser and Optics devices: Appropriate Instrumentation for scientific research and for appropriate solutions to developmental issues

(Chair : François PIUZZI)

9:00 – 09 :25 Semiconductor Lasers: Properties, types and applications

I.Fischer, Instituto de Fisica Interdisciplinar y Sistemas Complejos (IFISC) UIB-CSIC, Mallorca, Spain

09 :25 – 09 :50 Research on semiconductor lasers in developing countries: how to carry out completed research activities and impact on industrial, domestic, agricultural and medical activities?

Y.K. Chembo, Université de Franche-Comté, Besançon France

09:50 – 10:15 Applied optical spectroscopy and realistic instrumentation

M. B. Sorensen Division of Atomic Physics, Lund University, Lund, Sweden

10:15 – 10:55 Optoelectronic and electro-optic nonlinear delay dynamics: from the fundamental concepts to practical applications, through illustrations with live experiments

L. Larger, Université de Franche-Comté, Besançon France

10 :55 – 11:20 Coffee Break

Session 2: Dynamics of semiconductor lasers, electro-optic devices and applications

(Chair: Claudio MIRASSO)

11:20-11h 55: Synchronization: from oscillators to chaotic lasers

P. Colet, Instituto de Fisica Interdisciplinar y Sistemas Complejos (IFISC) UIB-CSIC, Mallorca, Spain

11: 55 – 12:10 Controlling alternate oscillations in semiconductor ring lasers with asymmetric backscattering

S. Takougang, University of Yaoundé I, Cameroon

Opening ceremony : 12: 10- 12: 55

Lunch break: 13:00-14: 20

Session 3 - Electronic circuits and semiconductor lasers

(Chair : Pere COLET)

14: 30 – 15:05 **Synchronization in delayed-coupled systems**

C. Mirasso Instituto de Fisica Interdisciplinar y Sistemas Complejos (IFISC) UIB-CSIC, Mallorca, Spain

15:05 - 15:30 **Information processing using delay systems**

I. Fischer Instituto de Fisica Interdisciplinar y Sistemas Complejos (IFISC) UIB-CSIC, Mallorca, Spain

15:30 - 15:55 **Semiconductor lasers dynamics: modulation with self-sustained electronic oscillator and analog simulation.**

J. Talla Mbe/ P. Wofo University of Yaoundé I, Cameroon

15:55-16:05: **Coffee break**

Session 4 – Construction of lasers and applications

(Chair : Ingo FISCHER)

16:05 – 16:30 **Imaging Spectroscopy and Multivariate Statistical Analysis Applied to Malaria Diagnosis and Drug-Target Interaction**

G. Zoueu Laboratoire d'Instrumentation, Image et Spectroscopie, Institut Polytechnique Houphouët Boigny Cote d'Ivoire

16 :30 – 16 :45 **Opto-electromechanical control of vibration of plate**

Nana Nbandjo / Sonfack Bouna University of Yaoundé I, Cameroon

16:45 – 17:00 **Optical fiber index sensor**

C. Nziengui Mabika Université Marien Ngouabi ENSP, Brazzaville République Populaire du Congo

17:00-17:15 **Global bifurcation of VCSELs dynamics : temperature and bifurcation**

A. Kenfack, University of Yaoundé I, Cameroon

17:15-17:35 **Characterization of the nonlinear optical properties of LiNbO₃-based materials using Raman spectroscopy.**

M. Ballo University of Maroua, Cameroon

17:35-17:45 **Fractional order dynamics in optical, biological and electromechanical systems**

Ngueuteu Mbouna, University of Yaoundé I, Cameroon

18:00 – 20:00 **Diner and cultural animation**

Wednesday, 07 December 2011 (Innovation for appropriate equipment, practical solutions to some developmental problems, poster and OSA UYI Students Chapter exhibition)

Session 5: Innovation for appropriate equipment

(Chair : Ladger WÖSTE)

08 : 30 – 09 :00

F. Piuzzi IGPD (EPS) et CEA Iramis France

09 :00 – 09 :30

M. B. Sorensen Division of Atomic Physics, Lund University Lund, Sweden

Session 6: Posters, solutions to some developmental problems and OSA UYI Students chapter exhibition

(Chair : Laurent LARGER)

9:30-9:45: **Presentation of the different topics of the session**

9:45-10:00: **Presentation of the OSA UYI Students Chapter**

J. Talla Mbe, President/OSA UYI Students Chapter, Cameroon

10:00-13:00: **Coffee, discussions at the exhibition site.**

Titles of the posters:

- 1- Dynamical Behavior of optomechanical systems: classical, semiclassical and quantum limits, *P. Djorwe , University of Yaoundé I, Cameroon*
- 2- Analytical Solution of the heat equation and study of the transfer energy mechanism in the femtosecond laser pulse interaction with metals, *F. Fotsa Ngaffo, University of Buea, Cameroon.*
- 3- Effects of demyelination and electromagnetic waves on the generation and propagation of front waves in nervous fibres. *A. Mboussi Nkomidio, University of Yaoundé I, Cameroon*
- 4- Behaviour at the edges: better surviving in fragmented landscapes, *M.G. Andreguetto, Institute for Theoretical Physics, University of Sao Paulo, Brazil*
- 5- Malaria and ecology: don't kill the insects, *R.M. Coutinho, Institute for Theoretical Physics, University of Sao Paulo, Brazil*
- 6- Contribution to the design, simulation and realization of an intelligent charge controller of accumulators in renewable energy power stations, *P. Ndong, University of Dschang, Cameroon.*
- 7- Design and simulation of an ultra modern remote control alarm to secure a public building: the case of the rectorate of the Dschang University, *C. Tchapa Tchito, University of Dschang, Cameroon.*
- 8- Free operator security remote controller for geo-localization of vehicles, *A.R. Tchamda, University of Dschang, Cameroon.*
- 9- A seven language electronic calendar for the revival of the Cameroon culture, *A.E. Tchahou Tchendjeu, University of Dschang, Cameroon.*
- 10-Experimental studies of an electromechanical chaotic sieve, *O. Tcheutchoua, University of Yaoundé I, Cameroon.*
- 11-Safety time in wooden beams structures under mechanical loads and fire, *A. Nubissie, University of Yaoundé I,*

Cameroon.

- 12-Realization of a FM radio emitter for domestic and enterprises uses, **F. Simo**, *University of Yaoundé I, Cameroon.*
- 13-Realization of an electromechanical door lockers with code, **A. Notue**, *University of Yaoundé I, Cameroon.*
- 14-Building Electronic version of African Musical Instruments, **G. Yamdjeu**, *University of Yaoundé I, Cameroon.*
- 15- Realisation of an emitter-receiver system based on free space optical communication, **F. Talla**, *University of Yaoundé I, Cameroon.*
- 16-Substrate geometry and static friction, **G. Djuidje Kenmoe**, *University of Yaoundé I, Cameroon.*
- 17- KDP crystal in an AC-driven RL circuit: dissipative and Hamiltonian chaos, and synchronization in an array of identical devices, **Y. Kondji**, *Université de Bangui, Central African Republic.*
- 18-Appearance of horseshoes chaos on a buckled beam controlled by distributed couple forces, **Oumarou Sanda Abo**, *Université de Bangui, Central African Republic.*
- 19- Experimental control of beam and plaques vibration, **A. Nanha**, *University of Yaoundé I, Cameroon.*
- 20-Two levels masking of optical telecommunication using VCSELS, **C. Goune**, *University of Dschang, Cameroon*
- 21-Bursting electromechanical system, **H. Simo**, *University of Yaoundé I, Cameroon.*

Titles of the exhibitions of the OSA UYI Students chapter:

- 1- Easy experiment on the transmission of sound with light (Laser), **F. Talla/L. Mandeng Mandeng**, *University of Yaoundé I, Cameroon.*
- 2- Hit the target, **C. Kouemou Hatou/ P. Djorwe**, *University of Yaoundé I, Cameroon.*
- 3- The Young's slots, **A. Nanha and A. Nubissie**, *University of Yaoundé I, Cameroon*

13:00- 20:00

Touristic tour at Ebogo (Travel Yaoundé-Ebogo: 13:00-14:30; Tour along the river Nyong and inside the forest and the village:14:30-18:30 ; Travel Ebogo-Yaoundé 18:30-20:00).

Thursday, 08 December 2011 (Biological and Medical Physics)

Session 7: Bio-engineering

(Chair : Rita NOUMEIR)

08:30-8:55 **Cortico-hippocampal oscillations in the retrieval of recent and remote memories.**

H. Cerdeira Institute for Theoretical Physics, University of Sao Paulo, Brazil

8:55-9:10 **Contribution to the design of artificial parts for the cardiovascular system : Reflectionless arterial prosthesis and artificial ventricle**

R.G. Kol/T.L. Abobda University of Yaounde I, Cameroon

Session 8: Water treatment

(Chair : Gérémie ZOUEU)

9:10- 9:30 **Water production and sanitation techniques in developing countries**

C. Iorio Chimie Physique, E.P. CP 165/62, Université Libre de Bruxelles, Belgique

9 :30-9 :40 **Designing iron/sand filters for safe drinking water**

K. Togue University of Yaounde I, Cameroon

Session 9: Medical images analysis and encoding

(Chair : Hilda CERDEIRA)

9:40-10:05 **Digital imaging and communication in medicine structured report document type definition**

R. Noumeir Ecole de Technologie Supérieure, Montréal, Québec, Canada

10:05-10 :25

A. Tiedeu University of Yaoundé I, Cameroon

10:25-10:55 **Coffee break**

Session 10: Complex dynamics and applications

(Chair : Roberto KRAENKEL)

10:55-11:20 **Modelling collective social dynamics**

M. San Miguel Instituto de Fisica Interdisciplinar y Sistemas Complejos (IFISC) UIB-CSIC, Mallorca, Spain

11:20-11:40 **An Extended Active Backstepping for Optimal Hyperchaos Synchronization**

A. N. Njah Department of Physics, University of Agriculture Abeokuta, Ogun State, Nigeria.

11:40-12:00 **Dynamics and optimal transport in ratchets coupled via a non-thermal bath**

E. V. Uchechukwu Department of Physics University, Ago-Iwoye, Nigeria.

Session 11: Mathematical Biology and applications

(Chair : Maxi SAN MIGUEL)

12:00-12:25 **Fragmented Forests: why do certain species disappear?**

R. Kraenkel Institute for Theoretical Physics, University of Sao Paulo, Brazil

12:25-12:45 **Reaction-Diffusion equations and colored patterns**

S. Noubissie/E.B. Tchawou, University of Dschang, Cameroon/ University of Yaoundé I, Cameroon

12:45- 13:00 **Mathematical analysis of a general class of ordinary differential equations coming from within-hosts models of malaria with immune infectors.**

J. Tewa University of Yaoundé I, Cameroon

13:00-15:00: Visit of the Mvog –Mbetsi zoological parc (parc in the Yaoundé city).

15:00- 18 h: Lunch+ Closing ceremony + cultural event.