



# **Hands-on Research on Complex Systems**

**Advanced Study Institute**

[www.handsonresearch.org](http://www.handsonresearch.org)

**2-13 August 2010**

**University of Buea, Buea, Cameroon**

*School Secretary*

**Ms. Stanka Tanaskovic**

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**SPONSORED BY:**

*Abdus Salam International Centre for Theoretical Physics (Trieste, Italy),  
U.S. National Science Foundation, Nigeria LNG Limited, and  
University of Buea (Ministry of Higher Education, Cameroon)*

**DIRECTORS: J. Foba and G. Ngwa, University of Buea;**

**R. Roy, University of Maryland; K. Showalter, West Virginia University;**

**K.R. Sreenivasan, New York University; H. L. Swinney, University of Texas;**

**ASSOC. DIRECTORS: M. Schatz, Georgia Tech; M. Shattuck, City College (NY)**

**TOPICS**

mathematical modeling	infectious disease	nonlinear optics	cell dynamics
animal locomotion	fluid dynamics	dynamical systems	turbulence
chemical oscillators	synchronization	electronic circuits	secure networks

**This two-week-long school will provide an interactive experience with hands-on research involving tabletop experiments with real-time computer data acquisition and associated computational modeling. Lectures and hands-on experiences will focus on complex systems in the physical and life sciences. This research is inherently interdisciplinary, and topics will range from laser chaos to disease epidemics. The faculty will be eminent scientists who have conducted frontier tabletop research published in leading international scientific journals.**

**While many areas of research now involve large numbers of collaborators using very expensive instrumentation, the *Hands-on School* is focused on frontier research that can be conducted by individuals or small groups using rather modest instrumentation. The faculty will lecture and lead small groups in laboratory sessions involving experiments and associated computational modeling.**

**Faculty:**

- T. Akenji (U. Buea) and G. Ngwa (U. Buea), communicable diseases
- Y. Chembo (FEMTO-ST Inst., France) & R. Roy (U. Maryland), nonlinear optics & instabilities
- D. I. Goldman (Georgia Tech), dynamics of animal locomotion
- B. Hunt (University of Maryland), modeling of dynamics, networks, and weather
- W. Patterson (Howard University), modeling data encryption and information security
- M. Schatz (Georgia Tech), turbulence
- E.-M. Schoetz (Princeton University), stem cells, wound healing, and regeneration in flatworms
- A. Sen (Institute for Plasma Research, India), chaotic oscillators
- M. Shattuck (City University of New York), modeling methods and pattern formation
- H. L. Swinney (University of Texas), instabilities in fluid flow between rotating cylinders
- M. Tinsley (Scottish Agricultural College, Inverness) and K. Showalter (West Virginia U.), synchronization of chemical oscillators

**Local Organizers: T. Nkuo-Akenji, J. Foba, G. Ngwa, V.P.K. Titanji (U. Buea),  
P. Wofo (Université de Yaounde I, Cameroon), and G.O.S. Ekhaguere  
(International Centre of Mathematical and Computer Sciences, Lagos, Nigeria)**

**PARTICIPANTS**

The School is mainly intended for young scientists and PhD students from developing countries, working in areas such as physics, chemistry, biology, and mathematics. Scientists from developed countries who are interested in international cooperation are also welcome to apply --- the school will be open to scientists from all countries that are members of the United Nations, UNESCO or IAEA. The School will be conducted in English; therefore, participants should have an adequate working knowledge of this language.

There is no registration fee, and lodging and meals will be provided for all participants. Support for travel is available for participants who are nationals of developing countries and are currently working in their home country, but every effort should be made by applicants to secure travel support from their home institutions. A statement of need must be included with the application. All participants are required to take part in all aspects of the school for the entire duration.

**Apply online at**

<http://agenda.ictp.it/smr.php?2181>

**APPLICATION**

**DEADLINE:**

**1 February 2010**