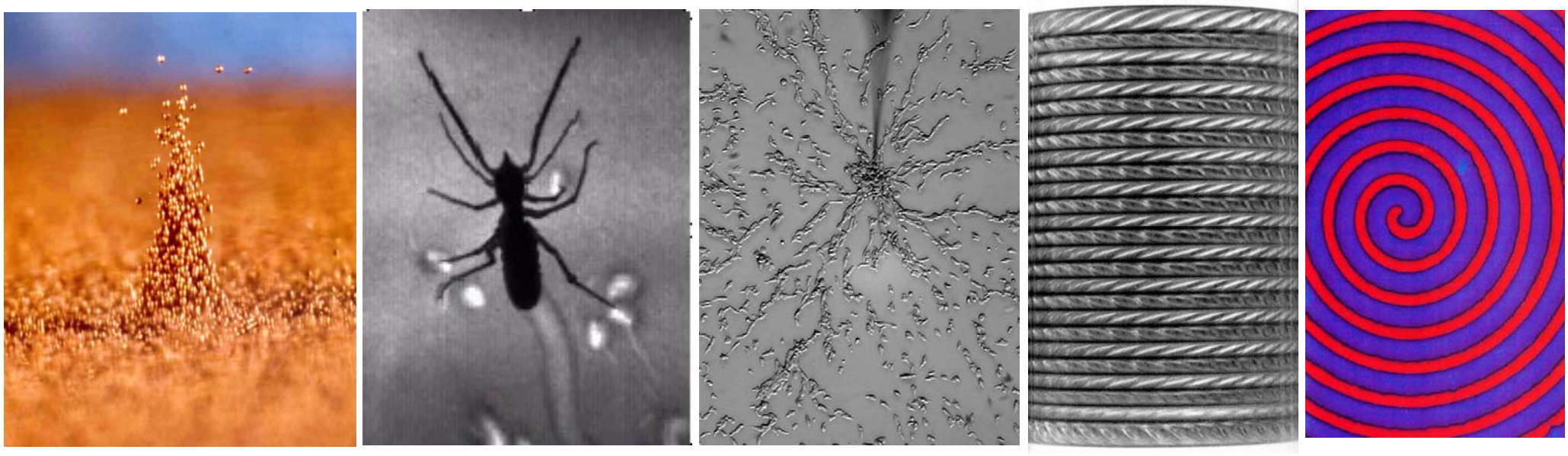

Hands-on Research
on Complex Systems
Advanced Study Institute
www.handsonresearch.org
2-13 August 2010
University of Buea, Buea, Cameroon

SPONSORED BY:
Abdus Salam International Centre for Theoretical Physics (Trieste, Italy), U.S. National Science Foundation, and Nigeria LNG Limited

DIRECTORS:
***J. Foba,* University of Buea; *G. Ngwa,* University of Buea;**
***R. Roy,* University of Maryland; *K. Showalter,* West Virginia University;**
***K.R. Sreenivasan,* ICTP; *Harry L. Swinney,* University of Texas**

TOPICS

modeling with MATLAB	networks	nonlinear optics	cell dynamics
animal locomotion	granular physics	fluid dynamics	turbulence
chemical oscillators	synchronization	electronic circuits	epidemiology

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 spatial patterns in fluids to biological networks. The school faculty will be eminent scientists who have conducted frontier table-top research published in leading international scientific journals such as *Nature*, *Science*, and *Physical Review Letters*.

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. Examples will be taken from research of the faculty members, who will lecture and lead small groups in laboratory sessions involving running experiments and performing associated mathematical and computational modeling. Data acquisition, data analysis, and computational modeling will be performed in the MATLAB environment.

Faculty will include:
- **D. I. Goldman (Georgia Tech), dynamics of animal locomotion**
- **E. C. Rericha (University of Maryland), biological cell dynamics**
- **R. Roy (University of Maryland), nonlinear optics and instabilities**
- **M. Schatz (Georgia Tech), turbulence**
- **A. Sen (Institute for Plasma Research), chaotic oscillators**
- **M. Shattuck (City University of New York), patterns and phase transitions in sand**
- **K. Showalter (West Virginia University), synchronization in chemical patterns**
- **B. Storey (Olin College), mathematical modeling methods; fluid instabilities**
- **H. L. Swinney (University of Texas), instabilities in fluid flow between rotating cylinders**

***Local Organizers:* J. Foba and G. Ngwa (U. Buea, Cameroon)**
P. Woafo (Université de Yaounde I, Cameroon), and G.O.S. Ekhaguere
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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

September 2009