



The Abdus Salam  
International Centre for Theoretical Physics

School and Conference on

# Computational Methods in Dynamics

20 June - 8 July 2011

Miramare, Trieste, Italy

The Abdus Salam International Centre for Theoretical Physics (ICTP) is organizing a **School and Conference on Computational Methods in Dynamics**, to be held from 20 June to 8 July 2011, in Trieste, Italy. It will be directed by J. Guckenheimer (Cornell), C. Simó (Barcelona) and W. Tucker (Uppsala).

Simulation of (continuous time) dynamical systems is often taken for granted in the sciences and engineering because methods for solving initial value problems of ordinary differential are one of a small number of basic numerical algorithms in toolkits for scientific computation. Modeling is seen as the hard part; simulating the models the easy part. Nonetheless, this process seldom answers all of the questions we ask about a model. Dynamical Systems Theory (DST) provides mathematical foundations for going much farther, but additional numerical methods are needed to connect the mathematics and the models. This summer school will examine such methods.

#### Main Topics:

- \* Normal forms
- \* Invariant manifolds
- \* Boundary value problems
- \* Interval analysis and rigorous numerics for dynamical systems
- \* Numerical integration of ODE. Basic and Taylor methods. Applications to simulation and dynamical indicators
- \* Zero finders, continuation and bifurcations. Applications to periodic orbits and other invariant objects

The first and second week (20 June - 1 July) will be a school. The third week (4 July - 8 July) will be an international conference.

The list of Plenary Speakers of the Conference, 4 - 8 July 2011, includes: Z. Arai, R. Barrio, M. Berz, W.-J. Beyn, R. Calleja, M. Capinski, N. Delanoue, H. Dijkstra, J. Féjóz, J. Galante, Z. Galias, D. Gaydashev, V. Gelfreich, W. Govaerts, À. Haro, W. Hayes, T. Johnson, À. Jorba, T. Kapela, Y. Kevrekidis, H. Koch, H. Kokubu, B. Krauskopf, C. Kuehn, J. Laskar, M. Leok, U. Locatelli, Y. Nishiura, H. Osinga, P. Roldán, J. Sánchez, T. Sauer, F. Schilder, C. Simó, A. Sterk, J.C. Tatjer, A. Vieira, R. Vitolo, G. Wanner, D. Wilczak, M. Yampolski, P. Zgliczynski.

#### PARTICIPATION

Mathematicians from all countries that are members of the United Nations, UNESCO or IAEA may attend the School. As it will be conducted in English, participants should have an adequate working knowledge of that language. Although the main purpose of the Centre is to help researchers from developing nations through a programme of training activities within the framework of international cooperation, students and scientists from developed countries are also welcome to attend. As a rule, travel and subsistence expenses of the participants should be borne by the home institution. Every effort should be made by candidates to secure support for their fare (or at least half-fare). However, limited funds are available for some participants who are nationals of, and working in, a developing country, and who are not more than 45 years old. **There is no registration fee.**

#### HOW TO APPLY FOR PARTICIPATION

The application form can be accessed at the activity website: <http://agenda.ictp.it/smr.php?2247>  
Once in the website, comprehensive instructions will guide you step-by-step, on how to fill out and submit the application form.

#### Activity Secretariat:

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#### DEADLINE:

**February 20, 2011**