ECCOMAS Thematic Conference

HIGH ORDER NON-OSCILLATORY METHODS FOR WAVE PROPAGATION, TRANSPORT AND FLOW PROBLEMS (HONOM 2009)

University of Trento, Italy
March 30th to April 2nd 2009

ORGANIZERS

E. F. Toro (Trento), M. Dumbser (Trento), C.-D. Munz (Stuttgart)

PLENARY SPEAKERS

F. Bassi (Bergamo, Italy)
J. Felcman (Praha, Czechia)
N. Kroll (Braunschweig, Germany)
C. Pares (Malaga, Spain)
P. O. Persson (UC Berkeley, USA)
S. Pirozzoli (Rome, Italy)
Z. J. Wang (Iowa State, USA)

BACKGROUND

A very wide variety of processes involve wave propagation and transport phenomena. Numerical simulation and prediction, particularly for scientific purposes, demand the use of accurate numerical methods for solving the associated systems of partial differential equations. This is most evident in acoustics, when attempting to evolve weak signals for long distances and for long times or in the simulation of turbulent flow when attempting to capture small structures on relatively coarse grids. In addition to the classical requirement of conservation, of fundamental importance is high accuracy in both space and time for all processes involved (e.g. advection, reaction, diffusion, dispersion). However, as is well-known from Godunov's theorem, accuracy of linear schemes greater than one brings in the Gibbs phenomenon, producing solutions with spurious oscillations. The real challenge is then to construct non-linear (non-oscillatory) schemes of high accuracy, even for solving linear problems.
Significant advances have been made in the last two decades on the construction of conservative, non-linear schemes of high order of accuracy in both space and time. These advances were pioneered by the family of TVD (Total Variation Diminishing) methods, by now a well-established approach that produces relatively simple and practical second-order schemes. To go beyond second-order, a high degree of sophistication is required. There are at present several approaches that, at least partially, fulfil some of the basic requirements. Examples include the ENO method and its variant the WENO method, the DG Finite Element methods and the ADER approach.

THEMES OF THE CONFERENCE AND CONTRIBUTED PAPERS

Algorithm design, analysis and applications of non-linear schemes of accuracy greater than two, following the finite difference, finite volume and finite element approaches. Potential contributors are invited to submit an abstract of no more than two pages in ps or pdf format via email to the organizers.

IMPORTANT DEADLINES

Abstract submission: January 31, 2009 Acceptance notification: February 15, 2009
Abstracts should be sent directly to **michael.dumbser@ing.unitn.it**

CONFERENCE FEES

No conference fees will be charged. Expenses for travel and subsistence are the responsibility of each participant.

10 GRANTS FOR YOUNG SCIENTISTS

There will be 10 grants for young scientists (PhD students or post-doctoral fellows) that will cover in full all local subsistence expenses (hotel and meals for the duration of the conference). Potential beneficiaries are invited to submit a CV and a letter of recommendation from the academic supervisor to the conference organizers.

REGISTRATION, ACCOMMODATION AND OTHER INQUIRIES

Early registration is advised, as our objective is to limit the number of participants to allow for greater interaction and to avoid parallel sessions. The conference secretary, Mr. Micheletti, will help you with hotel information and bookings and other administrative aspects of the conference.

CONFERENCE SECRETARY

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SUPPORTED BY

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Deutsche Forschungsgemeinschaft DFG

CIRM

ECCOMAS European Community on Computational Methods in Applied Sciences

CONFERENCE VENUE

The conference will take place in the conference centre of IRST, in Povo, a couple of kilometres from the centre of town.

ABOUT TRENTO AND THE DOLOMITES

The historical city of Trento is in the Trentino Province, close to the Dolomites, and is easy to reach by car or train from the north through Austria and from the south through Verona. Trento is located 150 km south of Innsbruck and 90 km north of Verona. The nearest and most convenient airport is Verona Airport, 15 minutes from the Verona train station. The region around Trento is of extraordinary beauty, with mountains, rivers, lakes, and all within a small radius.

SCIENTIFIC INQUIRIES TO:

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