

*First Announcement and call for papers*  
INTERNATIONAL CONFERENCE  
ON  
MATHEMATICAL MODELLING  
AND SCIENTIFIC COMPUTATION  
(MMSC-93)

September 14 — 17, 1993, Sozopol

Organized by  
the Bulgarian Academy of Sciences

Co-organizers:

Technical University — Sofia  
Institute of Applied Mathematics, University of Karlsruhe,  
Institute for Informatics, University of Basel,  
University of Southwestern Louisiana,  
International Institute for Applied System  
Analysis, Laxenburg, Austria,  
Institute of Numerical Analysis, University of Dublin,  
Department of Automatics and Informatics,  
Polytecnico Torino,  
Moscow Power Engineering Institute,  
Editorial Board of Interval Computations

**Purpose of the Conference:**

Revolutionary new ideas in scientific computation are strongly influencing mathematical modelling. Many numerical algorithms with automatic result verification, providing full control over the effects of computational errors and the uncertainties in the input data are developed. Software and hardware tools and programming languages supporting the performance of such algorithms are developed. In the near future suitable problem solving environments with result verification will be available for the most common mathematical problems. The use of such tools permits the reduction of the global computational error below known bounds, and as a consequence, a mathematically clear evaluation of the effects of an imperfect mathematical model. It is well-known that a main task of mathematical modelling is to make clear the deficiencies and the scope

of validity of a particular mathematical model, which is very difficult in a situation when the computational errors are beyond control.

At present there are two groups of specialists who need each others knowledge. On one side, there are numerical analysts designing methods with automatic result verification who need good examples of particular practical applications. On the other side, there are highly specialized "appliers" who have had experiences with traditional numerical methods and who do not know, or know very little of the new methodology for scientific computation. Many of those scientists are sometimes working hard to develop computer arithmetic tools by themselves. The purpose of the Conference is to gather these two diverse groups of specialists and thus to make available the new methodology for scientific computation and the new software tools to the scientific community.

The meeting will follow the tradition of four preceding workshops at national level and an international summer school on the same subject held parallel to the **SCAN-90** Conference in Albena, Bulgaria. The meeting in Albena was attended by more then 70 applied mathematicians and scientists; 28 selected papers were published as a volume: "**Mathematical Modelling and Scientific Computations**" (Eds. A. Andreev, I. Dimov, S. Markov, Ch. Ullrich), Bulgarian Academy of Sciences, Sofia, 1991, which is available from the Institute of Informatics, Mittlere Str. 142, CH-4056 Basel, Prof. Ch. Ullrich.

### Topics:

Numerical methods and applications in biology, biotechnology, ecology, physics, engineering, manufacturing and production systems; SC-programming languages, program packages and problem solving environments supporting scientific computations; mathematical models, involving interval-valued input data; enclosure (interval, ellipsoidal etc.) methods with automatic result verification for solving: linear and nonlinear problems, eigenvalue problems, functional equations, differential equations (IVP and BVP), differential inclusions, control theory problems (inclusion of reachable sets, robust parameter estimation), approximation and optimization theory problems etc. applied to particular modelling situations; the role of interval methods and computer arithmetic in theorem proving, computational geometry etc.; particular modelling situations underlying the above aspects (like mathematical models of dynam-

ical processes, involving uncertainties and the use of numerical methods with result verification); applied numerical analysis stressing on round-off error analysis, application of interval methods in knowledge based systems, knowledge engineering and intelligent data processing.

### **The official language of MMSC-93 is English**

#### **Call for papers**

Papers for the conference are welcome. Contributed papers should describe work that has not previously been submitted for publication. The conference has been coordinated with the Conference on Numerical Analysis with Automatic Result Verification, Lafayette, Louisiana, February 26 through March 1, 1993 and with the **SCAN-93** Conference in Vienna, Austria, September 26 through 29, 1993. The scientific program of these two conferences will include relevant sessions emphasizing various aspects of mathematical modelling. It is planned that parts of these sessions will be repeated in the form of poster sessions at the conference in Sozopol. Many materials from these both conferences will be available. Potential sessions organizers should immediately submit the title of the session they propose. A typical session consists of six 20-minute papers. Session organizers are responsible for the scientific quality of papers in their sessions, consequently, contributed versions of the papers invited by session organizers are automatically accepted.

#### **Registration Fees/Materials:**

The registration fee will cover the Proceedings (available at the beginning of the conference), a program booklet and materials from the Lafayette and Vienna conferences. Conference fee is 100 USD (US Dollars) until July 15, 1993 and 130 USD thereafter.

#### **Publications:**

Three copies of a contributed paper in **camera ready** standard **A4** format are to be submitted by April 1, 1993. The recommended length of four pages may be exceeded if page charges are paid. The contributions should be prepared as an **ASCII** file preferably with the macropackage

$\text{\LaTeX}$  (article style, 12pt) and the corresponding file should be submitted by e-mail (or on a diskette) as well as in printed form to some of the co-chairmen. The participants from the former Soviet Union should send their contributed papers to Prof. A. Voshchinin.

A strictly referred postconference volume of selected full length papers will be published under the title **Mathematical Modelling and Scientific Computations-93**. An agreement has been reached that the volume may include also relevant papers submitted to the conference on Lafayette or to **SCAN-93** and not included as full length papers in the transactions of these conferences. All papers to be included in the volume have to be presented in person at the conference in Sozopol or at some of the conferences in Lafayette or Vienna. After notification of acceptance the authors should present three copies of a **camera ready** full length paper (12 pages approximately) at the registration desk on the first day of the Conference.

### Schedule of Dates:

Return of form of intent as soon as possible.

Submission of contributed paper

(of 4 full pages recommended length)

April 1, 1993

Notification of acceptance

June 15, 1993

Pre-registration

July 15, 1993

### Venue:

The conference will take place in the Rest House of the Technical University – Sofia in Sozopol, September 14-17, 1993. Sozopol is an ancient town build by the Romans. It is placed 30 km South from Bourgas, which is an international airport.

### Accommodation and Social Program:

Excellent accommodation in the Rest House of the Technical University in Sozopol is offered at reasonable cost. Sozopol is a Black Sea resort with wide sandy beach. Yachting and surfing facilities are also available. An excursion will be organized to the resort on the sea cost. In September the weather should be fine with water temperatures above 20° C. If you decide to combine the Conference with a family holiday you may contact your

travel agent for a tourist package in the Holiday Village Djuni (Feriendorf Djuni), about 10 km South from Sozopol or in Sozopol.

**Program Committee:**

Chairman: S.Markov; Secretary: N.Dimitrova;

Co-chairmen: A.Andreev, E.Bonchev, I.Dimov, R.B.Kearfott,  
M.Krastanov, K.Madsen, D.Shiriaev, Ch.Ullrich, A.Voshchinin;

A.Baltov, F.Blomquist, D.Claudio, O.Iliev, K.Georgiev, A.Hachikjan,  
J.Herzberger, V.Hristov, E.Kelevedzhiev, N.Kirov, N.Kjurkchiev, L.Kolev,  
A.Macdivitt, P.Marinov, V.Mladenov, V.Njagolova (coordinator), A.Or-  
lov, P.Petrov, E.Popova, S.Radev, S.Simoff, G.Sotirov, S.Tashev, J.Wolff-  
von Gutenberg.

**Forms of Intent and Contributed Papers are to be send to the following address:**

N. Dimitrova (Secretary of MMSC-93):

Institute of Biophysics, BAS

Acad. G. Bonchev str., bl. 21

BG-1113 Sofia, Bulgaria

phone: (359 2) 70 74 60

e-mail: neli@bgearn.bitnet

**Adresses of co-chairmen of the Program Committee:**

R. B. Kearfott:

University of Southwestern Louisiana

Dept. of Mathematics, P.O. Box 41010

Lafayette, Louisiana 70504-1010, USA

phone: (1 318) 231 5270

E-mail: rbk@usl.edu

I. Dimov:

Center of Informatics and Computer Technology, BAS

Acad. G. Bonchev str., bl. 25A

BG-1113 Sofia, Bulgaria

phone: (359 2) 70 84 94

e-mail: ivdimov@bgearn.bitnet

D. V. Shiriaev:

Institut fuer Angewandte Mathematik  
Universitaet Karlsruhe, Kaiserstrasse 12  
D-W-7500, Karlsruhe 1, Germany  
Tel.: (49 721) 377935; Fax: (49 721) 69 52 83  
e-mail: dima@ iamk4508.mathematik.uni-karlsruhe.de

Ch. Ullrich:

Institute for Informatics, University of Basel,  
Mittlere Str. 142, CH-4056 Basel, Switzerland  
Tel.: (41 61) 321 99 68  
e-mail: ullrich@ urz.unibas.ch

A. P. Voshchinin:

Moscow Power Engineering Institute, Educational  
Technology Centre, 111250 Moscow, Russia,  
Krasnokazarmennaya str., 14  
Tel.: (7 095) 362 78 16; fax: (7 095) 361 16 20  
e-mail: apv@ mei.msk.su

**The Conference is Sponsored by:**

The Ministry of Education and Science, the Union of the Scientists and  
the Union of the Mathematicians in Bulgaria. MEGABYTE IN (MBI) –  
Sofia, TU – Vienna, U. of Karlsruhe.

**The conference is under the auspices of  
the President of the Bulgarian Academy of Sciences,  
the Rector of the Technical University – Sofia and  
the Mayor of Sozopol.**

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