

DEVELOPMENTS IN RELIABLE COMPUTING

Edited by

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Attila József: By the Danube

*Sitting on the steps of the quay
I watched a melon rind floating away.
Submerged in my fate I barely heard
the surface chatter. From the depths: not a word.
And just like my heart's high tide
the Danube was murky, wise wide.*

*Like muscles at work, muscles that
make bricks, dig, hammer and hoe—
that's how each movement of each wave
kicked into action, tensed and let go.
The river, like mother, told tales, lulled me,
and washed the city's dirty laundry.*

*A slow drizzle began to fall, but soon
gave up, as if it were all the same.
Still, I watched the horizon like one
inside a cave, watching a steady rain:
this gray eternal reain pouring, steadfast,
so transparent now, the many-colored past.*

*The Danube flowed on. Small white-
crested waves played laughing my way
like children in the lap of a fertile
young mother who sits dreaming away.
Awash in time's flood they chattered,
so many headstones, graveyards shattered.*

...

Translated by John Bátki.
Corvina, Budapest, 1997.

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Preface

The SCAN conference, the International Symposium on Scientific Computing, Computer Arithmetic and Validated Numerics, takes place biannually under the joint auspices of GAMM (Gesellschaft für Angewandte Mathematik und Mechanik) and IMACS (International Association for Mathematics and Computers in Simulation).

SCAN-98 attracted more than 100 participants from 21 countries all over the world. During the four days from September 22 to 25, nine highlighted, plenary lectures and over 70 contributed talks were given. These figures indicate a large participation, which was partly caused by the attraction of the organizing country, Hungary, but also the effective support system have contributed to the success. The conference was substantially supported by the Hungarian Research Fund OTKA, GAMM, the National Technology Development Board OMFB and by the József Attila University. Due to this funding, it was possible to subsidize the participation of over 20 scientists, mainly from Eastern European countries. It is important that the possibly first participation of 6 young researchers was made possible due to the obtained support. The number of East-European participants was relatively high. These results are especially valuable, since in contrast to the usual 2 years period, the present meeting was organized just one year after the last SCAN-xx conference.

The scientific contents of SCAN meetings traditionally cover all aspects of validation techniques in scientific computing, ranging from hardware requirements, elementary operations, high accuracy function evaluations and interval arithmetic to advanced validating techniques and applications in various fields of practical interest. To emphasize just some of the many topical subjects treated at SCAN-98 I mention the use of validation techniques in the analysis of dynamical systems, parallel validating algo-

rithms, systems of linear and nonlinear equations and global optimization, complexity results for problems with uncertain data, methods for ordinary and partial differential equations, and various applications. The full program and the volume of extended abstracts is available (among other information) on the web site of the conference:

<http://www.inf.u-szeged.hu/~scan98>

The present proceedings contain 30 contributions presented at SCAN-98, out of which 11 articles appear also in the special issue 5 (3) of the *Journal of Reliable Computing*. We are grateful to all authors for providing us with their interesting and well-written papers, to the more than 60 referees for their speedy and conscientious work. Seeing the quality of the resulting articles, I am sure the flexible settings of the submission and correction deadlines and the page limitation are justified. The two round refereeing procedure and the final editing providing the camera ready versions took some five months only. Due to technical reasons, the articles could not be grouped according to the subfields.

I would like to thank the members of the scientific committee for assisting in preparing the conference and selecting contributions. The advice of Götz Alefeld, Andreas Frommer, Jean-Michel Muller, and Ulrich Kulisch were very valuable, they are kindly acknowledged. I am indebted to George Corliss, who prepared the bibliography and volunteered refereeing many manuscripts in critical phases allowing a timely publication. I wish to express my particular gratitude to the members of the organizing committee involved in preparing and running the conference: András Erik Csallner, Mihály Csaba Markót, and Péter Gábor Szabó. Finally I thank Dmitry Kirshov, Vyacheslav Nesterov and Paul Roos for their kind help in the edition tasks of these volumes.

TIBOR CSENDES
Szeged, March 1999