

SIGNUM
NEWSLETTER

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SIGNUM

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SIGNUM Newsletter

The SIGNUM Newsletter is published four times a year by the Special Interest Group on Numerical Mathematics of the Association for Computing Machinery.

Material for the Newsletter is hereby solicited and should be submitted directly to the appropriate editor. The next issue will appear in June 1979 and the submittal deadline will be April 16, 1979.

Submitted material should be typed single space with margins suitable for photographic reduction to 75% of the original size. For this purpose, short submissions should be typed with a line width of 108 millimeters. Longer items should be typed in a double-column format consisting of two 305 mm. by 108 mm. columns separated by a 13 mm. wide central margin.

Signed articles appearing in this issue are not refereed; their authors are responsible for them. All unsigned material is the responsibility of the Editor.

Inquiries regarding SIGNUM membership, subscriptions to the Newsletter, and back or missing issues should be directed to SIGNUM, c/o ACM, 1133 Avenue of the Americas, New York, N. Y. 10036.

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C O N F E R E N C E C A L E N D A R

Note: Conference references below with a * designation are briefly described in the Future Meetings Section of this issue.

| <u>Date</u> | <u>Place/Sponsor/Contact</u> | <u>Title</u> |
|-------------------|--|--|
| April 3-5, 1979 | Urbana, Illinois SIGNUM, Computing Res. Lab. of C.S. Dept. at U. of Illinois Robert Skeel Dept. of Computer Science University of Illinois Urbana, Illinois 61801 (217) 333-2727 | 1979 SIGNUM Meeting on Numerical Ordinary Differential Equations* |
| April 3-5, 1979 | Cambridge, Massachusetts IEEE-CS Marvin Zelkowitz Dept. of Computer Science University of Maryland College Park, Maryland 20742 (301) 454-4251 | Specifications of Reliable Software |
| April 5-6, 1979 | Philadelphia, Pennsylvania IEEE-CS N. I. Badler Computer and Information Science Moore School of Electrical Engineering/D2 University of Pennsylvania Philadelphia, Pennsylvania 19104 (215) 243-5862 | Workshop on Computer Analysis of Time-Varying Imagery |
| April 8-11, 1979 | Montreux, Switzerland European Fed. of C.E. Ing R. Lierau LaRoche and Co. A. G. Grenzacherstrasse 124 CH-4002 Basel, Switzerland | Computer Applications in Chemical Engineering |
| April 9-11, 1979 | Liverpool, England Dr. M. A. Hennell Computational and Statistical Science Dept. University of Liverpool Liverpool 3 England | Conference on the Production and Assessment of Numerical Software |
| April 23-25, 1979 | Williamsburg, Virginia ANS Mathematics and Computation Division ANS Virginia Section Dr. L. L. Barinka Babcock and Wilcox P. O. Box 1260 Lynchburg, Virginia 24505 | Computational Methods in Nuclear Engineering |
| April 23-25, 1979 | Philadelphia, Pennsylvania ACM SIGARCH, IEEE-CS Barry R. Borgerson, Conf. Chm. Sperry Univac Box 500 Blue Bell, Pennsylvania 19424 (215) 542-2013 | 1979 International Symposium on Computer Architecture |

 C O N F E R E N C E C A L E N D A R (c o n t i n u e d)

| <u>Date</u> | <u>Place/Sponsor/Contact</u> | <u>Title</u> |
|------------------------|---|--|
| April 29 - May 2, 1979 | New Orleans, Louisiana TIMS, ORSA Irving H. Lavalley Tulane University Graduate School of Business Adm. New Orleans, Louisiana 70118 | TIMS/ORSA National Meeting |
| April 30 - May 2, 1979 | Atlanta, Georgia ACM SIGACT and Georgia Institute of Technology Alfred V. Aho, Conf. Chm. Bell Telephone Labs 600 Mountain Ave. Murray Hill, New Jersey 07974 | Eleventh Annual ACM Symposium on Theory of Computing |
| May 7-8, 1979 | Madison, Wisconsin University of Wisconsin Gladys Moran Symposium Secretary Mathematics Research Center University of Wisconsin 610 Walnut Street Madison, Wisconsin 53706 | Symposium on Analysis and Computation of Fixed Points* |
| May 10-11, 1979 | Waterloo, Ontario, Canada University of Waterloo in cooperation with ACM Jane F. Gentleman, Symp. Chm. Dept. of Statistics University of Waterloo Waterloo, Ontario Canada N2L 3G1 | Computer Science and Statistics: Twelfth Annual Symposium on the Interface |
| May 17, 1979 | Gaithersburg, Maryland NBS, IEEE-CS Trends and Applications 1979 Box 639 Silver Spring, Maryland 20901 | Trends and Applications 1979 |
| May 24-25, 1979 | Washington, D.C. George Washington University Anthony V. Fiacco, Gen. Chm. School of Engineering and Applied Science George Washington University Washington, D. C. 20052 | Symposium on Mathematical Programming with Data Perturbations |
| May 30 - June 1, 1979 | Rochester, New York ACM STAPL F. W. McTaggart I. P. Sharp Assoc. Inc. 183 Main Street Rochester, New York 14604 (716) 546-7270 | APL 79 |
| June 4-7, 1979 | New York, New York AFIPS AFIPS 210 Summit Ave. Montvale, New Jersey 07645 | National Computer Conference |

C O N F E R E N C E C A L E N D A R (c o n t i n u e d)

| <u>Date</u> | <u>Place/Sponsor/Contact</u> | <u>Title</u> |
|------------------|---|--|
| June 11-13, 1979 | Toronto, Ontario, Canada SIAM H. B. Hair SIAM 33 South 17th Street Philadelphia, Pa. 19103 | SIAM 1979 Spring National Meeting |
| June 17-29, 1979 | Washington, D.C. David C. Hoaglin, Conf. Dir. c/o Laboratory for Information and Decision Systems Room 35-433 Massachusetts Institute of Technology Cambridge, Massachusetts 02139 | Summer Research Conference in Numerical and Statistical Analysis* |
| June 20-22, 1979 | Washington, D. C. M.I.T., U.S. Army, and U.S. Navy with the cooperation of ACM - SIGSAM Elizabeth Cuthill Code 1805 David Taylor Naval Ship R & D Center Bethesda, Maryland 20084 | Second MACSYMA Users' Conference |
| June 20-22, 1979 | Bethlehem, Pennsylvania IMACS R. S. Stepleman RCA Laboratories Princeton, New Jersey 08540 (609) 452-2700 | Third IMACS International Symposium on Computer Methods for Partial Differential Equations |
| June 26-28, 1979 | Marseilles, France ACM SIGSAM, MGCM Anthony C. Hearn, Conf. Chm. Dept. of Computer Science University of Utah Salt Lake City, Utah 84112 (801) 581-8502 | EUROSAM 79, 1979 European Symposium on Symbolic and Algebraic Manipulation* |
| June 26-29, 1979 | Dundee, Scotland Dr. G. A. Watson Math Dept. University of Dundee Dundee DD1 4HN Scotland | Dundee Biennial Conference on Numerical Analysis 1979 |
| June 27-29, 1979 | Dublin, Ireland NASECODE I 39 Trinity College Dublin 2, Ireland | NASECODE I - Conference on the Numerical Analysis of Semiconductor Devices* |
| July 16-18, 1979 | Toronto, Ontario, Canada SCS, ISA, AMS, SHARE A. J. Schiewe, Gen. Chm. c/o The Aerospace Corp. Box 92957 Los Angeles, California 90009 (213) 648-6120 | 1979 Summer Computer Simulation Conference |

 C O N F E R E N C E C A L E N D A R (C o n t i n u e d)

| <u>Date</u> | <u>Place/Sponsor/Contact</u> | <u>Title</u> |
|-----------------------|---|---|
| July 18-20, 1979 | Durban, South Africa Computer Science Dept. University of Natal H. Roland Weistroffer Computer Science Dept. University of Natal King George V Avenue Durban 4001 Republic of South Africa | Fifth South African Symposium on Numerical Mathematics |
| August 8-10, 1979 | Chicago, Illinois ACM SIGGRAPH B. W. Pollack Program Chairman Department of Computer Science University of British Columbia 2075 Wesbrook Place Vancouver, B. C., Canada V6T 1W5 (604) 228-6794 or 228-3061 | SIGGRAPH '79-Sixth Annual Conference on Computer Graphics and Interactive Techniques |
| August 27-31, 1979 | Montreal, Quebec, Canada MPS Symposium Secretariat Tenth International Symposium on Mathematical Programming 772 Sherbrooke Street West Montreal, Quebec Canada H3A 1G1 | Tenth International Symposium on Mathematical Programming* |
| September 4-6, 1979 | Southampton, England R. Adey ENGSOFT 6 Cranbury Place Southampton SO2 0LG England | International Conference and Exhibition on Engineering Software |
| September 4-9, 1979 | Warsaw, Poland IFIP with Polish Academy of Sciences as organizer K. Iracki Systems Research Institute Polish Academy of Science ul. Newelska 6, 01-447 Warsaw, Poland | Ninth IFIP Conference on Optimization Techniques |
| September 12, 1979 | Namur, Belgium IAC J. Lemaire Managing Director IAC Palais des Expositions Place Andre Rijckmans B-5000 Namur Belgium | International Symposium on Cybernetics and Software |
| September 17-19, 1979 | Munich, West Germany ACM SIGSOFT, IEEE-CS, Gesellschaft für Informatik Frederick L. Bauer, Conf. Chm. Institut für Informatik Technische Universität München Munich, West Germany | Fourth International Conference on Software Engineering |

 C O N F E R E N C E C A L E N D A R (c o n t i n u e d)

| <u>Date</u> | <u>Place/Sponsor/Contact</u> | <u>Title</u> |
|--------------------------|---|---|
| September 25-28, 1979 | London, England IFIP with British Computer Society as host Euro IFIP 79 Program Committee Secretariat IFIP Foundation Paulus Potterstraat 40 Amsterdam 1007 The Netherlands | Euro IFIP 79 |
| October 29-31, 1979 | Detroit, Michigan ACM Mayford L. Roark, Gen. Chm. Ford Motor Company The American Road Room 895 WHQ Dearborn, Michigan 48121 (313) 323-1690 | ACM 79* |
| November 12-14, 1979 | Boulder, Colorado SIAM H. B. Hair SIAM 33 South 17th St. Philadelphia, Pa. 19103 | SIAM 1979 Fall Meeting |
| November 14-16, 1979 | Houston, Texas IEEE-CS and EUROMICRO in cooperation with ACM Samuel C. Lee Dept. of Electrical Engineering and Computing Sciences University of Oklahoma 202 W. Boyd Norman, Oklahoma 73019 | First International Micro and Mini Computer Conference |
| December 3-5, 1979 | San Diego, California ACM SIGSIM, NBS, IEEE-CS, ORSA, AIIE Mitchell G. Spiegel, Conf. Chm. Deputy Director Dept. of Air Force FEDSIM/NA Washington, D. C. 20330 | 1979 Winter Simulation Conference |
| March 31 - April 2, 1980 | Brighton, England Inst. of Mechanical Engineers, Inst. of Structural Engineers, Inst. of Civil Engineers, CAD Centre, and others in co-operation with ACM SIGDA Gareth Jones Conf. Chm. IPC Science and Technology Press Ltd. 32 High Street Guildford, Surrey England GU1 3EW | CAD 80-Fourth International Conference on Computers in Engineering and Building Design |
| June 16-20, 1980 | Montreal, Quebec, Canada Prof. R. P. Shaw S.U.N.Y. at Buffalo Buffalo, New York 14214 | Second International Symposium on Innovative Numerical Analysis in Applied Engineering Science* |

MESSAGE FROM THE CHAIRMAN

John R. Rice, SIGNUM Chairman
Computer Sciences Dept.
Purdue University
West Lafayette, Indiana 47907

I will report on several developments concerning SIGNUM that have taken place in the past few months. Probably the most significant is the decision for SIGNUM to become actively involved in the development of Fortran. The details of this effort are announced elsewhere in the Newsletter. Our community, and the scientific computing community in general, was not well represented in the previous effort and it is essential that we become involved if we wish to preserve Fortran as a useful language. SIGNUM should make this effort one of its principal activities over the next few years.

I am pleased to announce that Charles William Gear has been chosen as the George E. Forsythe Memorial lecturer. Gear exemplifies the kind of outstanding individual whose leadership this award recognizes.

I am also pleased to announce that I have appointed John Gary from the University of Colorado as a SIGNUM editor for TOMS. His three-year term started in January. He replaces George Byrne who was a very capable and conscientious editor; SIGNUM is fortunate to have such capable people willing to volunteer their time and energy to helping TOMS.

More fundamental, but rather dull, is the adoption of the new bylaws for SIGNUM as published in the September 1978 issue of the Newsletter. There were no changes in the final bylaws from those proposed. The major effect of this change is on officers and elections. The nominations of the Nominations Committee are given elsewhere; members should note that the bylaws allow other nominations to be made by the membership. ACM rules now require that officers of SIG be elected by first class mail ballots rather than through the Newsletter as we have done in the past.

SIGNUM is involved in several meetings and conferences. The SIGNUM conference on Numerical Ordinary Differential Equations is about to take place as you read this and I think this will be a definitive conference in this field. I am anxiously awaiting to see which program wins the OlympiODE. SIGNUM will sponsor a session at ACM-79 (Detroit next fall) and members are invited to keep this in mind as a place to present a paper. SIGNUM is also considering arranging a session at the AAAS meeting in January of 1980 at San Francisco. The topic being considered is "Technology Transfer through Mathematical Software" or, perhaps, "Can Software Replace Technical Know-How". In principle, this meeting provides a great opportunity for SIGNUM to address the scientific community and press. In practice, attendance at previous SIGNUM sessions has been low; software has not been as attractive as the latest pictures from Mars.

Finally, I want to say that I am very pleased that this issue of the Newsletter is big and full of meat. I want to encourage all SIGNUM members to think of the Newsletter as a place to send interesting and timely material. You will find the

Editor very receptive and the other members of SIGNUM are really interested in what you are doing and thinking.

1979 SIGNUM ELECTION

The SIGNUM Nominations Committee has chosen the following slate of candidates:

Chairman - Bill Buzbee and Lloyd Fosdick
Vice Chairman - John Dennis and Fred Fritsch
Sec. - Treas. - Ken Atkinson and Jim Phillips
SIGNUM Board - Richard Bartels, Wayne Enright,
Bob Huddleston, Mike Saunders,
Bob Skeel, and Margaret Wright

Additional nominations can be made by the membership.

Starting this year, officers of SIGNUM will be elected by first class mail ballots. All eligible voting members should receive their ballots during Spring 1979.

BRIAN SMITH
APPOINTED TO HEAD
SIGNUM FORTRAN COMMITTEE

John R. Rice, SIGNUM Chairman
Computer Sciences Dept.
Purdue University
West Lafayette, Indiana 47907

I am pleased to announce that Brian Smith has agreed to head a committee within SIGNUM to represent its views to the ANSI Committee X3J3 which is developing the next Fortran standard. (Target date 1982.) In the past there has been very little representation on X3J3 from the numerical computation community; the bulk of the members have been manufacturers' representatives, compiler writers, or government agency representatives. Brian Smith will be a regular, voting member of X3J3. This is a substantial commitment as X3J3 meets five or six times a year and generates many proposals to be read and analyzed. Brian will be assisted by five or six "observers" who are committed to occasionally attend X3J3 meetings, to keep up-to-date on X3J3 activities, and to help analyze Fortran proposals.

SIGNUM views this activity as having great importance to its members and has budgeted travel support of \$2000.00 per year for the head of the committee.

The SIGNUM Fortran Committee consists of the following individuals:

Brian T. Smith (Head) - Applied Mathematics Div., Argonne National Laboratory, Argonne, IL 60439;
T. J. Aird - IMSL, Sixth Floor-GNB Bldg., 7500 Bellaire Blvd., Houston, TX 77036; S. I. Feldman - Bell Telephone Laboratories, 600 Mountain Avenue, Murray Hill, NJ 07974; T. E. Hull - Dept. of Computer Science, University of Toronto, Toronto, Ontario, CANADA M5S1A7; W. M. Kahan - Dept. of E.E. and Computer Science, University of California, Berkeley, CA 94707; F. T. Krogh - Jet Propulsion Laboratory, MS 125-128, 4800 Oak Grove Dr., Pasadena, CA 91102; J. R. Rice - Computer Sciences Dept., Purdue University, West Lafayette, IN 47907.

CHARLES WILLIAM GEAR
NAMED

1979 GEORGE E. FORSYTHE MEMORIAL LECTURER

John R. Rice, SIGNUM Chairman
Computer Sciences Dept.
Purdue University
West Lafayette, Indiana 47907

Professor C. W. Gear gave the George E. Forsythe Memorial Lecture at the Computer Science Conference, February 21, 1979. Prof. Gear's lecture was one of the principal addresses at the Dayton meeting and was entitled: Numerical Software: Science or Alchemy. The talk presented many provocative ideas on the art and science of designing and implementing high quality numerical software.

The George E. Forsythe Lectureship was established by SIGNUM shortly after Forsythe's death in 1972. The award is made every two years with the selection based on well-rounded leadership in the field of numerical mathematics. George Forsythe made substantial contributions to research, but even more significant were his contributions to defining the frontiers of the field, in giving direction and encouragement to young researchers, in representing its (and Computer Sciences in general) interests in Washington and across the nation, and in establishing and administering one of first and best educational programs in Computer Science. It is a privilege for SIGNUM to use his name to honor others for their leadership in Numerical Mathematics.

Gear has given the same high level of leadership as Forsythe. He received his Ph.D. in mathematics from the University of Illinois in 1960 while on a Fulbright fellowship from England. He then spent two years at the IBM British Laboratories in England before returning to the University of Illinois as an Assistant Professor of Computer Science. He has been there ever since and is now Professor of Computer Science and Applied Mathematics. Gear has made visits on leave to Stanford University, Yale University, and the University of Nice and has consulted extensively for government laboratories and industry.

Gear has a long publication record of research centered on the numerical solution of ordinary differential equations. In addition to fundamental work on this central topic, he has made important contributions to automatic problem solving systems, network analysis, the use of graphics and the design of high quality numerical software. Some of the very best codes for solving ordinary differential equations are derivatives of his programs. Gear has also been active in Computer Science education by writing several texts ranging from Introduction to Computer Science to an advanced book on the numerical solution of ordinary differential equations. He has just finished a whole series of texts at the introductory level. He has had 9 Ph.D. students.

Gear's leadership has extended outside research and education. He has been active in editorial matters (editor for SIAM J. on Numerical Analysis, Computers and Graphics, ACM Transactions on Mathematical Software, and SIGGRAPH Newsletter) and in ACM society matters (ACM Council, SIG Board). And, of course, we recall the accomplishments of his

term as Chairman of SIGNUM; he has also served two terms on the SIGNUM Board of Directors. SIGNUM is pleased to recognize this outstanding record of leadership and accomplishment by awarding Gear the Forsythe Memorial Lectureship.

The Forsythe Lectureship award is made by a committee of the past Forsythe lecturers and it includes an appropriate plaque and a tax free monetary award (currently \$500). The previous recipients of this award were W. M. Kahan (University of California at Berkeley), John R. Rice (Purdue University), and Gene H. Golub (Stanford University).

P A S T M E E T I N G

IFIP - TC2 Working Conference Organized by
Working Group 2.5 (Numerical Software)

Lloyd Fosdick
Computer Science Dept.
University of Colorado
Boulder, Colorado 80309

This meeting dealt with Performance Evaluation of Numerical Software and was held in Baden, Austria on 11 December - 15 December. A list of papers presented at this conference follows.

Tom E. Hull: Correctness of numerical software.

W. Stanley Brown: Some fundamentals of performance evaluation for numerical software.

Theodorus J. Dekker: Correctness proof and machine arithmetic.

James Lyness: Performance profile and software evaluation.

Thomas L. Jordan: A performance evaluation of linear algebra software in parallel architectures.

Lloyd D. Fosdick: Detecting errors in software.

Igor N. Molchanov: Performance evaluation of linear algebra software.

Brian T. Smith: Can automated theorem provers be used to evaluate linear algebra software?

Iain S. Duff and John K. Reid: Performance evaluation of codes for sparse matrix problems.

Brian Niblett: Legal aspects of numerical software.

Edward L. Battiste: Reliable - Warrantable code.

Colin F.H. Tapper: Legal remedies for misrepresentation of software.

Hans J. Stetter: Performance evaluation of o.d.e. software through modelling,

Peter J. van der Houwen and J.G. Verwer:
Comparison of algorithms for systems
of o.d.e.'s originating from parabolic
initial boundary value problems in two
dimensions.

Wayne H. Enright: Using a testing package
for the automatic assessment of numerical
methods for o.d.e.'s.

Walter Murray and Phillip E. Gill:
Performance evaluation for optimization
software.

Klaus Schittkowski: Numerical comparison of
optimization software using randomly
generated test problems.

Robert B. Schnabel: Two aspects affecting
development, testing, and performance of
software for unconstrained optimization.

Jorge J. More': Developing and testing
quality optimization software.

John R. Rice: Methodology for the algorithm
selection problem.

John A. Nelder: Experimental design and
statistical evaluation.

Brian Ford, Graham S. Hodgson, and
David K. Sayers: Evaluation of numerical
software for many machines - is it
possible?

There were two panel discussions.

The use of mathematical software outside the
mathematical community.

Nonlinear programming software.

The proceedings of this conference are being
published by North-Holland and should be available
in fall 1979 for approximately \$24.00.

FUTURE MEETINGS

1979 SIGNUM MEETING ON NUMERICAL
ORDINARY DIFFERENTIAL EQUATIONS

On April 3-5, 1979, ACM SIGNUM, the Department
of Computer Science at University of Illinois-
Urbana, and the National Science Foundation are
sponsoring a meeting on Numerical Ordinary Differ-
ential Equations to be held in Champaign, Illinois.
The scope of the meeting includes all aspects of
the numerical solution of initial value problems
for ordinary differential equations: theory, algo-
rithms, software, applications.

On April 3 and 4, the symposium will feature
the following special forty-minute presentations:
J. C. Butcher (University of Auckland) - Stability
Properties for a General Class of Methods for Ord-
inary Differential Equations; Germund Dahlquist
(Royal Institute of Technology) - Some Properties
of Linear Multistep and One-Leg Methods for Non-
linear Initial Value Problems; T. E. Hull (University

of Toronto) - What Might ODE Solvers be Tested For?;
J. D. Lambert (University of Dundee) - Some Nu-
merical Methods for Special Classes of Stiff Dif-
ferential Equations; L. F. Shampine (Sandia Lab-
oratories) - Implementation of Implicit Formulas
for the Solution of ODEs; H. F. Stetter (Technische
Hochschule Wien) - to be determined. Each of the
aforementioned talks will be followed by two twenty-
minute presentations and a break. On April 4 and
5, a workshop will be held consisting of panel dis-
cussions with audience participation on such topics
as techniques for oscillatory systems and other
difficult problems, techniques for special second
order systems, method of lines, implementation of
implicit Runge-Kutta codes, test results and test-
ing, and user interface standards.

An informal proceedings will be distributed at
the meeting. Included will be summaries of the
papers and an ODE software directory. Formal pub-
lication will be arranged for many of the confer-
ence papers in a single issue of the SIAM Journal
of Numerical Analysis and in the December 1979 issue
of the ACM Transactions on Mathematical Software.

An OlympiODE will be conducted for IVP inter-
grators prior to the conference with the results
made known at the meeting. Professor T. E. Hull
of the University of Toronto has kindly agreed to
sponsor this competition for FORTRAN programs in
cooperation with the conference organizers at the
University of Illinois. The number of entries may
be limited, and so prospective contestants should
seek confirmation and further information from
Professor T. E. Hull, Department of Computer
Science, University of Toronto, Toronto, Ontario,
Canada M5S 1A7 (416/978-5181).

Registration for members of ACM or SIGNUM
is \$39, for non-members \$49, and for students \$10,
which includes coffee breaks and proceedings. The
registration fee of \$39 or \$49 includes a buffet
lunch on April 4 and if paid in advance of March
20, also includes a banquet April 3. THE \$39 OR
\$49 REGISTRATION FEE DOES NOT INCLUDE THE BANQUET
IF RECEIVED AFTER MARCH 20. Additional banquet
tickets may be purchased in advance at \$15 each.
To register, follow directions on the registra-
tion form found on the next page. Registration
is possible at the conference on the morning of
April 3.

For further information, please contact
R. D. Skeel
Department of Computer Science
University of Illinois
Urbana, Illinois 61801
(217) 333-6454.

SIGNUM Editor's Note: The above information was
received after the December issue of the Newsletter
had already gone to press; however, SIGNUM members
by now should have received a separate brochure
sent to their attention and which included regis-
tration and accommodation information. The details
in the above notice are for those who may have mis-
placed the brochure and/or non-SIGNUM members who
did not receive one.

REGISTRATION FORM FOR THE NUMERICAL ODE CONFERENCE

PLEASE PRINT

Name _____

Affiliation _____

Address _____

Telephone _____

- \$39 for SIGNUM or ACM Members
- \$49 for non-members
- \$10 for students

The registration fee of \$39 or \$49 includes a buffet luncheon on April 4 and if received before March 20 also includes a banquet on April 3. Additional banquet tickets may be purchased in advance at \$15 each.

Send remittance payable to "Numerical ODES" to Numerical Ordinary Differential Equations, Department of Computer Science, University of Illinois, Urbana, Illinois 61801, U.S.A.

SYMPOSIUM ON ANALYSIS AND
COMPUTATION OF FIXED POINTS

This meeting is scheduled for May 7-8, 1979 at the University of Wisconsin - Madison. The symposium is to consist of approximately twelve invited addresses on such topics as numerical methods for computation of fixed points of single- or multi-valued functions, results on existence and stability of fixed points, and applications. Invited speakers include, among others: B. Curtis Eaves, C. B. Garcia, Masakazu Kojima, Tien-Yien Li, Romesh Saigal, and Michael J. Todd.

Requests for a brochure containing detailed program and registration information should be directed to

Gladys Moran, Symposium Secretary
Mathematics Research Center
University of Wisconsin-Madison
610 Walnut Street
Madison, Wisconsin 53706.

SUMMER RESEARCH CONFERENCE
IN
NUMERICAL AND STATISTICAL ANALYSIS

To promote interdisciplinary research and training in numerical analysis, data analysis, and mathematical statistics, a conference is planned for the two-week period June 17 to 29, 1979. The emphasis will be on developing a framework of understanding for the interrelations among these fields, and this will be the focus of ten short but intensive series of lectures spanning a range from important background information to current research. The lecturers for the conference will be: David R. Cox, John E. Dennis, Gene H. Golub, Paul W. Holland, Peter J. Huber, Virginia C. Klema, Donald B. Rubin, Burton H. Singer, G. W. Stewart, and James H. Wilkinson. In addition to attending the lectures, participants will be encouraged to contribute to discussions of current research, applications, and open problems.

The site of the conference will be Airlie House, near Washington, D. C., and registration fee (to cover room and board) will be approximately \$550. All plans for the conference are tentative, subject to funding. It is hoped that funds will be available to defray travel costs and registration fee for a number of young professionals who would otherwise be unable to attend.

Attendance will be limited to fifty participants, chosen according to their qualifications and the ways in which the conference could benefit their research work. Applicants must submit a curriculum vitae and a brief statement indicating their possible contributions to and benefits from the conference. Students and those who have received the doctorate after June 1977 may wish to obtain a letter of support from their research supervisor, major professor, or department chairman. The deadline for receipt of applications (and letters of support) is April 1, 1979. These should be sent to the conference director,

Dr. David C. Hoaglin
c/o Laboratory for Information and
Decision Systems
Room 35-433
Massachusetts Institute of Technology
Cambridge, Massachusetts 02139.

EUROSAM 79 - EUROPEAN SYMPOSIUM ON SYMBOLIC
AND ALGEBRAIC MANIPULATION

EUROSAM 79 will be held during June 26-28, 1979 at the Luminy Campus of the Universite d'Aix-Marseilles II, Marseilles, France, and is sponsored by ACM/SIGSAM (ACM Special Interest Group on Symbolic and Algebraic Manipulation) and MGCM (Marseilles Group on Computational Methods). Attention will be focused on such topics as the following: data structures, design and analysis of algorithms, and complexity; languages, systems, and machine architectures; algebraic, elementary, and transcendental function computations; computational number, group, and ring theory; interface of numeric and symbolic computational methods; applications, including computational physics, structural mechanics, and program verification. The Proceedings will be distributed at the symposium and will subsequently be available

as a bound soft-cover issue of the SIGSAM Bulletin.
For further information, direct inquiries to
either

David Y. Y. Yun
IBM T. J. Watson Research Center
P. O. Box 218
Yorktown Heights, New York 10598

Hans van Hulzen
Technische Hogeschool Twente
Postbus 217
Enschede
The Netherlands.

NASECODE I - CONFERENCE ON THE NUMERICAL
ANALYSIS OF SEMICONDUCTOR DEVICES

On June 27-29, 1979, NASECODE I will be held in Dublin, Ireland under the auspices of the Numerical Analysis Group, Trinity College, University of Dublin, Dublin, Ireland. Topics of this meeting include: finite difference and finite element techniques for semiconductor devices; numerical simulation of bipolar and field effect transistors; numerical simulation of power semiconductor devices, e.g. thyristors; numerical simulation of impatt and transfer electron devices; numerical simulation of energy conversion devices, e.g. solar cells; numerical methods used in integrated circuit design. Invited speakers include: M. S. Adler (General Electric Company); J. Borel (Centre d'Etudes Nucléaires de Grenoble), P. Cottrell (I.B.M.), W. L. Engl (Institut für Theoretische Elektrotechnik), K. Kani (Nippon Electric Company, Ltd.), M. S. Mock (Rutgers University), D. H. Navon (University of Massachusetts); S. J. Polak (N. V. Philips Gloeilampenfabrieken), and W. D. Ryan (Queen's University-Belfast).

For further information please contact:

Secretary
NASECODE I
39 Trinity College
Dublin 2, Ireland.

TENTH INTERNATIONAL SYMPOSIUM ON
MATHEMATICAL PROGRAMMING

This meeting will be held on August 27-31, 1979 in Montreal, Quebec, Canada. The symposium is sponsored by the Mathematical Programming Society and IFORS. It is being organized by McGill University, Université de Montréal, Ecole Polytechnique de Montréal, Ecole des Hautes Etudes Commerciales de Montréal, and Concordia University. The meeting will include plenary sessions as well as a series of parallel sessions including both invited and contributed papers. An attractive program of social events is being planned.

An indicative list of traditional and proposed topics includes the following: linear, integer, mixed integer programming; nonlinear, nonconvex, nondifferentiable optimization; optimization in networks, graphs, and combinatorics; computational complexity, heuristics; implementation and evaluation of algorithms and software; complementarity

and fixed point theory; game theory, multicriterion optimization; dynamic programming, optimal control theory, stochastic programming; data fitting, function approximation; large scale optimization; teaching of mathematical programming. Also to be included are topics from the following application areas: urban, educational, and health care systems; environmental, natural, and human sciences; energy, agriculture, and forestry; engineering, economics, and management; traffic and transportation; industry, government.

For further information, direct inquiries to:

Tenth International Symposium on
Mathematical Programming
772 Sherbrooke Street West
Montreal, Quebec
Canada H3A 1G1.

ACM 79

The annual meeting of the ACM will be held October 29-31, 1979 in Detroit, Michigan. The technical program has the theme "Advances of the 70's - Challenges of the 80's". The conference will focus on the advances of the state-of-the-art of computing during the past decade, the challenges that face computing in the next decade, and the transfer of computer technology from today's research to tomorrow's practice.

For further information about the meeting contact either

Mayford L. Roark - General Chairman
Ford Motor Company
The American Road, Room 895WHQ
Dearborn, Michigan 48121
(313) 323-1690

or

James L. Elshoff - Program Chairman
Computer Science Department
General Motors Research Laboratories
Warren, Michigan 48090
(313) 575-3180.

SECOND INTERNATIONAL SYMPOSIUM ON
INNOVATIVE NUMERICAL ANALYSIS IN APPLIED
ENGINEERING SCIENCE

This meeting will be held in Montreal, Quebec, Canada on June 16-20, 1980; the host institution is the Ecole Polytechnique de Montréal. Sessions will be held on the campus and lectures will be given in English and French. The Proceedings of full-length papers will be available at the time of the meeting.

Current research and development activities in applied engineering science have been strongly influenced by recent developments in numerical analysis. Much of this current work is the result of technology transfer, such as modeling air pollution problems with finite element-based tools, numerical application of classical analysis methods, such as boundary-integral equation analysis, and combined-method analysis where different tools are merged to solve problems intractable to analysis by the separate tools. In addition, greater emphasis

is being placed on the interaction between analysis and design-application of these advanced numerical methods. This Symposium seeks to recognize these areas of current research in innovative numerical analysis in order to provide a forum for technology transfer between active contributors and users, and between technology areas. The meeting further seeks to emphasize the application of numerical analysis as opposed to the mathematical foundation of various numerical procedures.

For further information, direct inquiries to
 Professor R. P. Shaw
 S.U.N.Y. at Buffalo
 Buffalo, New York 14214.

A N N O U N C E M E N T S

REQUEST FOR INFORMATION ON INSTITUTIONAL
 REPORTS OF INTEREST TO SIGNUM

Newsletter readers are encouraged to submit announcements of the availability of institutional reports in the numerical mathematics area. The information should be given in the following format:
 Author, Title, Report Number, Institution.
 Category, i.e., quadrature, complexity, etc.
 Starting in 1979, the reports will be listed by category with cross-reference at the end of each listing. Two listings will be compiled each calendar year.

Please send announcements of reports to

Dr. Hatem M. Khalil
 SIGNUM Newsletter Editor for
 Institutional Reports
 Department of Computer and
 Information Sciences
 103 Smith Hall
 University of Delaware
 Newark, Delaware 19711.

SPECIAL ISSUE OF LINEAR ALGEBRA AND ITS
 APPLICATION DEVOTED TO LARGE SCALE
 MATRIX PROBLEMS

The aim of this special issue is to encourage the development of rigorous mathematical methods in linear algebra for solving problems involving large (sparse or non-sparse) matrices. This issue, to be published in the Journal in 1980, will also appear as a hard-bound book published by Elsevier North Holland.

Contributions should be appropriate for publication in Linear Algebra and Its Applications and will be subjected to the usual review procedure. The scope of papers will cover a wide range of problems and applications, including but not limited to:

1. Direct and iterative methods in numerical linear algebra involving large (sparse or non-sparse) matrices.
2. Localization or existence type problems involving large matrices, e.g., eigenvalue location problems.
3. The use of graph theoretic techniques in handling large sparse matrices, e.g., bandwidth minimization problems.
4. Large scale matrix problems arising in mathematical models or programming, e.g., Markov or input-output analysis problems.

5. Large scale matrix techniques for approximation and reconstruction problems.

6. Complexity theory for large scale matrix problems.

The deadline for submission is November 30, 1979. Papers for this issue should be submitted to either

Professor Åke Björck
 (before June 1, 1979)
 Department of Computer Science
 Serra House, Serra Street
 Stanford University
 Stanford, CA 94305
 (after June 1, 1979)
 Department of Mathematics
 Linköping University
 S-58183 Linköping, Sweden

or

Professor Robert J. Plemmons
 Departments of Computer Science and Math.
 The University of Tennessee
 Knoxville, Tennessee 37916

LOCAL WASHINGTON, D.C. SIGNUM CHAPTER

A local chapter of SIGNUM has been formed in the Washington, D.C. area with officers:

Chairman: Howard A. Keiser
 Computer Sciences Corporation
 8728 Colesville Road
 Silver Spring, Maryland 20910
 (301) 589-1545, ext. 592/503

Program: Martin R. Cordes
 National Bureau of Standards
 Gaithersburg, Maryland 20234
 (301) 921-2631.

SIGNUM members in the DC area are encouraged to contact these officers and join the local chapter. The chapter would like to have speakers from other parts of the country; so if you plan to be in DC and have an interesting talk, they would love to have you. The chapter cannot pay any travel expenses but they can provide a good meal and friendly discussions.