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Michigan State University

Today's Topics:

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GAMM-SIAM Conference on Inverse Problems
Conference on Dynamic System Identification & Inverse Problems
Inverse Problems in Engineering Seminar
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Mail to ipnet-digest@math.msu.edu

Information about IPNet:
Mail to ipnet-request@math.msu.edu

From: ipnet-digest@math.msu.edu
Subject: IPNet Membership
Date: Wed, 19 Jan 1994

In the first 2 weeks of its existence, the IPNet has subscribed around 150 members. To obtain a list of current subscribers and their e-mail addresses, send a message to 'ipnet-request@math.msu.edu' with the following in the body of the message:

who

The subject line of the message is ignored.

All submissions to the IPNet Digest are encouraged. Send news items via e-mail to 'ipnet-digest@math.msu.edu' for consideration in the next issue.

From: wiedmann@ihf.uni-stuttgart.de (Frank Wiedmann)
Subject: An Ill-Conditioned Circuits Problem
Date: Tue, 11 Jan 1994

I am an EE student presently working on my final project. The problem I have to solve is to calculate the currents in an electric circuit from the electro-magnetic fields measured above the circuit.

The way I am dealing with this at the moment is the following: The circuit is modeled as a rectangular wire grid with constant currents assumed in each section of the grid. The fields above the grid caused by these currents are then calculated yielding a matrix mapping the currents in the different sections of the grid to the fields at the various points above the grid.

Then the (generalized) inverse of this matrix is calculated using singular value decomposition (SVD) giving a matrix that maps the measured fields to the currents. Due to the comparatively bad condition of the matrix

and to errors in the measured data, regularization has to be used. Presently this is being done by setting the lower singular values to zero when calculating the generalized inverse until the result "looks good" (at the moment I have very little information on the amount of error in the measured data). The results I am getting this way look acceptable from a qualitative point of view, if they are really good quantitatively has not been checked yet.

I would like to hear comments (alternative/superior methods, problems that might occur, etc.) from others that have already dealt with this kind of problem, as I think that it should be a fairly common one. I am also interested in good books on the subject (SVD, generalized inverse, regularization, etc.).

Thank you very much for your time,

Frank Wiedmann
E-Mail: wiedmann@ihf.uni-stuttgart.de

From: "PROF.HEINZ W. ENGL" <engl@indmath.uni-linz.ac.at>
Subject: GAMM-SIAM Conference on Inverse Problems
Date: Tue, 11 Jan 1994

GAMM-SIAM Conference on
"Inverse Problems in Diffusion Processes"

St.Wolfgang, Austria June 27 - July 1, 1994

First Announcement

This conference is the first one in a series of conferences on different application fields of inverse problems. The organizing committee for this series consists of David Colton (Newark, DE, USA), Heinz W. Engl (Linz, Austria), Alfred Louis (Saarbrücken, Germany), and William Rundell (College Station, TX, USA). In addition, there is an advisory committee consisting of M.Bertero, G.Chavent, M.Cheney, R.Ewing, A.Friedman, R.Kre_, K.Kunisch, P.Sabatier, and W.Symes.

The first conference is organized locally by Heinz W. Engl and focusses on inverse problems as they appear in the mathematical formulation of diffusion processes, both transient (parabolic pde's) and steady-state (elliptic pde's). This includes parameter identification problems and problems involving side conditions that render them ill-posed. Besides questions of uniqueness and stability, numerical algorithms and applications in science and technology are of special interest.

The following invited speakers have so far confirmed their presence at least tentatively: A.Bakushinskii, J.Beck, G.Crosta, L.Elden, A.Friedman, Hong-Ming Yin, V.Isakov, K.Kunisch, A.Lorenzi, B.Lowe, D.Ross, T.Seidman, D.Tataru, G.Vainikko, S.Vessella, and K.Zeman.

In addition to invited talks, there will also be the possibility of some contributed talks of 30 minutes (including discussion) fitting into the scope of the meeting. Participants who wish to give a talk should indicate below and include an abstract. Since we want to avoid parallel sessions, we also encourage participation at this conference just by being there and taking part in the discussions!

The meeting will be held in a conference center on Lake St.Wolfgang in

one of the most picturesque parts of the Austrian Alps. Because of space limitations, the meeting will be open to up to 120 participants. Therefore, we suggest early registration!

The most convenient airport (and train station) is Salzburg, Austria. Salzburg has good flight connections to major gateway airports in central Europe and good train connections to Munich and Vienna. Since June/July is high tourist season, early flight bookings are advised. However, please do not make a firm booking before you hear from us! Detailed travel information from Salzburg onwards will be sent in a second announcement.

Participants should arrive at the conference center on June 26 and leave on July 2. The total price for accommodation and full board for this period is currently 4000 Schilling (minor changes possible; currently, 7.15 Schilling = 1 DM, 11 Schilling = 1 US\$). Accommodation for accompanying persons is very limited in the conference center, but double rooms in hotels can be booked if we know early enough (at different prices depending on the category).

There will be a conference fee of up to 1400 Schilling. This also includes an excursion on Wednesday afternoon (price for accompanying persons: 250 Schilling). If our funding applications are successful, this conference fee might be substantially smaller. The exact amount will not be known until a few weeks before the meeting. In addition to this possible reduction of the conference fee, financial support for participants other than invited speakers is not available.

If you want to participate in this meeting, please ask for the registration form as soon as possible; technically, the registration deadline is January 21, 1994, but registrations which are a little bit late can still be accepted. Contact me either by Fax at +43-732-2468855 or by E-Mail: engl@indmath.uni-linz.ac.at

Prof.Dr.Heinz W. Engl

From: beck@egr.msu.edu (Dr. James Beck)
Subject: Conference on Dynamic System Identification, Inverse Problems
Date: Wed, 19 Jan 94

Second International Conference
DYNAMIC SYSTEM IDENTIFICATION
and
INVERSE PROBLEMS

St.Peterburg, Russia 22 - 25 August 1994

Organized by:
Moscow Aviation Institute, International Center for Advanced Studies
"Cosmos", Scientific Council on Thermal Problem in Technology of Russian
Academy of Sciences

Objectives:
Identification problems of Thermodynamics, Mechanical, Fluid
Mechanical, Electrical, and Nuclear System in industry (which are
usually of a very complex nature, involving different types of
mechanisms, nonlinearities, phase change and other phenomena) is a very
important branch of engineering science at present.

Following the successful first conference in this series, held in

Suzdal, Russia, in 1990, the aim of this second international conference on Dynamic System Identification and Inverse Problems is to discuss the type of inverse problems and optimal experiment design problems which occur in engineering practice. The behaviour of numerical methods in these extreme conditions will be investigated and the methods critically evaluated by comparison with experiments or established benchmarks wherever possible.

The conference is of importance to all scientists and engineers who are actively involved in developing an innovative approach as well as in solving industrial problems. Methods of interest include all efficient numerical techniques being applied to cope with a wide variety of identifications problems.

The International scientific advisory committee members anticipate that the conference will point out new directions in identification of mathematical models of dynamic processes.

Conference Themes:

The topics below give a guideline for possible inverse problems contributions. Papers on other related topics will also be accepted if they fall within the objectives of the conference.

| | |
|-----------------------------------|----------------------------------|
| Heat Conduction | Thermal Stability |
| Thermal Radiation | Vibration |
| Diffusion-Convection | Acoustics |
| Thermal Processes in Porous Media | Materials Processing |
| Thermal Processes in Composites | Elasticity and Elasto-Plasticity |
| Phase Change Processes | Tomography |
| Fire and Combustion | Gas-Liquid Flows |
| | Nuclear Transport |

International scientific advisory committee:

Chairman: Prof. O.M. Alifanov Moscow Aviation Institute,
Russia

| | |
|-----------------------|--|
| Prof. J.V. Beck | Michigan State University, USA |
| Prof. A.F. Emery | University of Washington, USA |
| Prof. J.P. Bardon | ISITEM, University of Nantes, France |
| Prof. Y.M. Matseevity | Institute for Problems in Machinery, Kharkov, Ukraine |
| Prof. V.A. Morozov | Moscow State University, Russia |

Executive committee:

| | |
|----------------------|---------------------------|
| Dr. A.V. Nenarokomov | Moscow Aviation Institute |
| Mr. S.A. Budnik | ICAS "COSMOS" |
| Dr. N.V. Kerov | Moscow Aviation Institute |
| Dr. V.V. Michailov | Moscow Aviation Institute |

Mini-Exhibition

There will be a small table-top exhibition of publications, hardware and software relevant to the conference themes. For more information please express your interest on the attached enquiry form.

Call for papers

Papers are invited on the topics outlined above and other topics which will fit within the general scope of the Conference. Abstracts of no more than 300 words should be submitted to the Conference Secretariat at the above fax, telex or E-mail addresses by February 1, 1994. Abstracts should clearly state the purpose, results and conclusions of the work to be described in the final paper.

Time Schedule

Return reply form: As soon as possible

Submit abstract (300 words): February 1, 1994
Preliminary acceptance: February 1, 1994
Submit final Paper: April 1, 1994
Final acceptance: April 20, 1994

Enquiry Form:

Identification of Dynamic Systems and Inverse Problems
22 - 25 August 1994, St.Peterburg, Russia

Title.....Initials.....
Surname.....
Organization.....
Address.....
Tel.....
Fax.....
EMail.....

- # I intend to participate in the Conference
- # I intend to submit a paper to the Conference
- # An abstract (300 words) is attached
- # I am interested in the mini-exhibition facilities.

I suggest that this announcement may also be sent to:

Title and name _____
Address _____

Please return the completed Enquiry form by Fax, Telex or EMail to:
E.V. Filatova, Conference Secretariat Tel.#: 7(095) 158-47-56
Moscow Aviation Institute Fax : 7(095) 229-32-37
Dept. of Space System Engineering Telex: 411746 Sokol SU
4, Volokolamskoe Sh., Email:
COSMOS@SOVAMSU.SOVUSA.COM
Moscow, 125871, Russia

From: kwoodbur@kepler.me.ua.edu (Keith Woodbury)
Subject: Inverse Problems in Engineering Seminar
Date: Tue, 18 Jan 94

The Sixth INVERSE PROBLEMS IN ENGINEERING SEMINAR
Monday, June 13 - Tuesday, June 14, 1994
and
THEORETICAL AND COMPUTATIONAL ASPECTS OF ILL-POSED PROBLEMS WORKSHOP
Saturday June 11 - Sunday June 12, 1994
Cincinnati, OH 45221-0025

CALL FOR PAPERS

The Sixth Inverse Problems in Engineering Seminar is being organized by the Department of Mathematical Sciences at the University of Cincinnati. This event is the continuation of the informal seminars which were initiated at Michigan State University in 1987. This seminar will be sponsored by the McMicken College of Arts and Sciences, C.P. Taft Memorial Fund, Office of Vice President for Research and University Dean of Advanced Studies, and the Department of Mathematical Sciences at the University of Cincinnati.

Papers are solicited from all areas involving inverse methods and their applications. Four broad categories are being used to organize sessions. These categories, with some subtopics delineated, are:

1. Inverse Problems in Heat Transfer
 - * Inverse Heat Conduction
 - * Thermal Property Estimation

2. Mathematical Aspects of and Techniques for Inverse Problems
 - * Inverse Theory and Methods
 - * Stability Considerations
3. Design of Experiments and Applications of Inverse Methods
 - * Optimal Experiment Design
 - * Analysis of Actual Experimental Data
4. Inverse Problems Exclusive of Heat Transfer
 - * Bio-Engineering Inverse Problems
 - * Shape Optimization
 - * Inversion of Interferometric Data
 - * Inverse Scattering and Tomography{space.1}

Presentations will be informal twenty minute talks, supported by transparencies or slides, and followed by discussion. If the number of submissions warrants additional program time, a poster session will be included. Please submit a tentative TITLE and an ABSTRACT BY FEBRUARY 15, 1994. The seminar fee is \$50.

The Theoretical and Computational Aspects of Ill-Posed Problems Workshop is being planned in conjunction with this year's seminar. This workshop is planned primarily for graduate students in Engineering and the Sciences and will consist of three 2 hour presentations followed by open discussions. Talks will cover the mathematics and the numerical implementation of several algorithms including: Tikhonov Method, Iterate Conjugate Method, Future Times Function Specification Method, and the Mollification Method. The Workshop Fee is \$25.

Send titles and abstracts or other inquiries to either:

Chairman:

| | |
|-------------------------------------|-----------------------|
| Prof. Diego Murio | Phone: (513) 556-4088 |
| University of Cincinnati | FAX: (513) 556-3417 |
| Department of Mathematical Sciences | email: |
| diego@dmurio.csm.uc.edu | |
| Mail Location 25 | |
| Cincinnati, OH 45221-0025 | |

Co-Chair:

| | |
|--------------------------------------|---------------------------|
| Dr. Keith A. Woodbury | Phone: (205) 348-1647 |
| The University of Alabama | FAX: (205) 348-6419 |
| Department of Mechanical Engineering | email: woodbury@me.ua.edu |
| Box 870276 | |
| Tuscaloosa, AL 35487-0276 | |

 From: Richard Brualdi <brualdi@math.wisc.edu>
 Subject: Table of Contents: LINEAR ALGEBRA AND ITS APPLICATIONS
 Date: Tue, 11 Jan 1994

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IPNet Digest: Volume 1, Number 02 February 3, 1994

Today's Editor: Patricia K. Lamm, Michigan State University

Today's Topics:

Inversion Without Computing the Forward Solution
Modal Analysis and Identification of Mechanical Structures
Symposium on Inverse Problems in Engineering Sciences
Symposium on Control Problems in Industry
3DVIEWNIX: Software for the Visualization of Multidimensional

Images

Contents: SIAM J. Mathematical Analysis
Contents: SIAM J. Control and Optimization

Submissions for IPNet Digest: Mail to ipnet-digest@math.msu.edu

Information about the IPNet: Mail to ipnet-request@math.msu.edu

From: stenger@sinc.cs.utah.edu (Frank Stenger)
Subject: Inversion Without Computing the Forward Solution
Date: Sun, 30 Jan 1994

Dear subscribers,

A student of mine, Micheal J. O'Reilly, and I have recently written a manuscript on a stable "sinc" procedure of inverting the three dimensional Helmholtz equation without computing the forward solution. The three dimensional procedure can be carried out in parallel, via a sequence of one-dimensional quadratures. (We did not determine the minimum number of sources required in the manuscript, which has since been submitted for publication.) Please let me know if you are interested in receiving a LaTeX or a .ps version of this manuscript, via e-mail.

--Frank Stenger e-mail: stenger@cs.utah.edu

From: abdelgha@lmgc.univ-montp2.fr (ABDELGHANI Maher LMGC Stucture)
Subject: Modal Analysis and Identification of Mechanical Structures
Date: Thu, 3 Feb 1994

Dear All,

I am a Ph.D student at the University of MontpellierII, France and I am working on Modal Analysis and Identification of Mechanical Structures. I would like to get in contact with other researchers working in the same area. I welcome all comments and discussions.

Sincerely,

Maher Abdelghani
abdelgha@lmgc.univ-montp2.fr

From: Myama <myama@tansei.cc.u-tokyo.ac.jp>
Subject: Submission of Call for Papers of the Symposium on Inverse Problems
Date: Tue, 25 Jan 1994

Call for Papers
2nd International Symposium, Inverse Problems in Engineering Sciences
(IPES-94)

July 27 - July 30, 1994

Osaka Institute of Technology, Osaka, Japan

Chairman: T.Nishida (Kyoto University)
Vice-Chairmen: Z.Nashed (University of Delaware),
V.Romanov (Russian Academy of Sciences)
Sponsors: Osaka Institute of Technology, Sanwa Systems Development
Co.,Ltd.

In order to establish mathematical backgrounds for inverse problems and to attempt further development, we require interdisciplinary researches involving mathematics, applied mathematics, and engineering. The aim of this symposium is to give opportunities for presentations of research and interdisciplinary discussions for inverse and ill-posed problems in engineering sciences.

Symposium topics include: inverse scattering problems; identification of unknown coefficients; determination of boundaries and domains, parameter estimation; numerical analysis for these problems; regularization methods; mathematical treatment of ill-posed problems. moment problems, signal recovery and tomography, etc.

Keynote speakers: H.D.Bui (France), M.Ikawa (Japan), S.I.Kabanikhin (Russia)

If you are interested in giving an oral presentation, please submit an extended abstract (no more than 2 pages of 8-1/2 x 11" paper) by June 15, 1994. ; We plan to publish the Proceedings of this symposium.

For further information please contact: Professor Masahiro Yamamoto (General Secretariat), Department of Mathematical Sciences, University of Tokyo, 3-8-1 Komaba Meguro, 153 JAPAN. Fax: +81-3-3481-5464; e-mail: ipes@kusm.kyoto-u.ac.jp.

From: flores@siam.org
Subject: Symposium on Control Problems in Industry
Date: Wed, 19 Jan 1994

ANNOUNCING...

Symposium on Control Problems in Industry
Holiday Inn by the Bay
July 22-23, 1994
San Diego, CA

This symposium will focus on industrial control applications that have benefited from recent mathematical and technological developments. The presentations have been selected primarily for the practical significance of the problems solved, though all have significant mathematical content. They are a good sample of current work in industrial control, with emphasis on real-world payoff.

The speakers come from industry and academia, and they will cover a broad range of applications, including applications from the automotive, aerospace, chemical, electronics industries and applications in optics, process control and image processing. Anyone who values useful

mathematics will find much of interest in this symposium.

The symposium is being conducted by SIAM with the cooperation of the Institut National de Recherche en Informatique et en Automatique (INRIA).

Symposium Themes: The symposium will focus on the following applications and methods:

- o Applications of Control Techniques in
 - the aerospace industry
 - the automotive industry
 - the environmental sciences
 - manufacturing processes
 - the petroleum industry
- o Optimal Shape Design in Aerospace Applications
- o Optimal Design of Micro-optics
- o Robust Control and H-infinity Methods

Invited Presentations: There will be four 40-minute presentations in the morning and four in the afternoon of each day. In addition, a limited number of contributed presentations are expected.

Control Techniques Applied to Combustion Problems.

Jeffrey Cook Ford Motor Company, Dearborn, Michigan

New Directions in Industrial Control.

Edward J. Davison University of Toronto, Canada

Controlled Scattering of Light Waves: Optimal Design of Micro-Optical Devices.

David C. Dobson Texas A&M University, College Station

Control Law Design for the Space Station.

Michael Elgersma Honeywell Technology Center, Minneapolis

Use of Control Theory in the Petroleum Industry.

Richard E. Ewing Texas A&M University, College Station

Control of Semiconductor Manufacturing Systems.

Pramod P. Khargonekar University of Michigan, Ann Arbor

Nonlinear Dynamics of Compressor Stall.

Frances McCaughan Case Western Reserve University

Modeling and Optimization for Damped Telescopes.

Mark Millman Jet Propulsion Laboratory, Pasadena

Scattering of High Frequency Waves by Coated Bodies Using Exact

Controllability Methods: CEM Applications in Aerospace Engineering.

Jacques Periaux Aviation Marcel Dassault, St. Cloud, France

Applied Mathematics and the Automotive Industry.

Barry Powell Ford Research, Belleville, Michigan

Gauge Control of Film and Sheet Forming Processes.

James B. Rawlings University of Texas, Austin

The Invariant Heat Equation and Image Analysis.

Guillermo Sapiro Technion--Israel Institute of Technology

Applications of Optimal Control to Groundwater Contamination:

Large-Scale Control Algorithms.

Christine A. Shoemaker Cornell University

Control of Hydraulic Equipment of a River Valley.

Serge Steer INRIA, Le Chesnay, France

Applications of H-infinity Control to Wave Generators in a Canal.

Jean-Pierre Yvon Universite de Technologie de Compiegne,

France

Robustness Analysis of Dynamic Inversion Control Laws for Nonlinear

Control of Fighter Aircraft.

Bingyu Zhang University of Minnesota, Minneapolis

Organizing Committee:

Irena Lasiecka (chair)
Department of Applied Mathematics
University of Virginia

Blaise Morton
Honeywell Technology Center
Minneapolis

Jacques Henry
INRIA, Le Chesnay, France

How to Contribute...

A limited number of contributed papers will be accepted for 20-minute presentations at the symposium. These papers must address a significant application of control theory to an industrial problem.

To submit a paper for presentation, send a title and an abstract not exceeding 250 words to SIAM via

E-Mail: meetings@siam.org
FAX: 215-386-7999
Post: SIAM, 3600 University City Science Center
Philadelphia, PA 19104-2688

Include authors names and affiliations, postal and e-mail addresses, telephone and fax numbers. Indicate the name of the speaker if there is more than one author. LaTeX macros are available upon request. Be sure to mention that your submission is for the Symposium on Control Problems in Industry.

The deadline for receipt of abstracts at SIAM is April 22, 1994.

Registration information about the symposium will be available in mid-April, 1994. To ensure receiving your copy, contact SIAM now.

From: Vhelp@mipgsun.mipg.upenn.edu
Subject: 3DVIEWNIX
Date: Fri, 21 Jan 1994

We are distributing our software system 3DVIEWNIX. As a first step, we have created an anonymous FTP account that contains one particular set of tools from 3DVIEWNIX. These constitute only a fraction of the entire 3DVIEWNIX system. They allow a variety of structure manipulation operations. We have included only the executables (although the actual 3DVIEWNIX distribution will include source code), both the Silicon Graphics and SUN versions, and a couple of data files. We encourage you to explore the numerous operations that are possible even with this limited set of tools. The operations are quite intuitive, but you may want to read some general instructions in the MANUAL.ps file before starting.

1. The FTP account can be accessed as follows:

Hostname: mipgsun.mipg.upenn.edu (IP address: 130.91.180.111)
Username: anonymous
Password: your e-mail address

2. Once you are logged in, type the following command:

```
% cd /pub
```

3. Set the transfer mode to 'binary' by typing the command:

```
% binary
```

4. Files for SUN, SGI, and PC platforms are available on this directory. Depending on the architecture of your platform you should 'get' the appropriate one by typing the following command:

```
% get 3dviewnix-sgi.tar.Z
      or
% get 3dviewnix-sun4.tar.Z
      or
% get 3dviewnix-linux_v0.99.11_SLS.v1.03.tar.Z
```

5. Once the file is transferred type the command:

```
% quit
```

6. Now that you are back in your own machine you have to uncompress the transferred file by issuing the command:

```
% uncompress 3dviewnix-sgi.tar.Z
      or
% uncompress 3dviewnix-sun4.tar.Z
      or
% uncompress 3dviewnix-linux_v0.99.11_SLS.v1.03.tar.Z
```

7. The next step is to 'untar' the file:

```
% tar -xvf 3dviewnix-sgi.tar
      or
% tar -xvf 3dviewnix-sun4.tar
      or
% tar -xvf 3dviewnix-linux_v0.99.11_SLS.v1.03.tar
```

Follow further instructions given in the README file. We hope you will like these tools and for information or feed-back contact us at:

Vhelp@mipgsun.mipg.upenn.edu

```
-----
3DVIEWNIX : A DATA-, MACHINE-, AND APPLICATION-
-----
            INDEPENDENT SOFTWARE SYSTEM FOR THE VISUALIZATION
            AND ANALYSIS OF MULTIDIMENSIONAL IMAGES
```

3DVIEWNIX is a transportable, very inexpensive software system developed by the Medical Image Processing Group, Department of Radiology, University of Pennsylvania, Philadelphia. It has state-of-the-art capabilities for visualizing, manipulating, and analyzing multidimensional, multimodality image information. It is designed to run on Unix machines with X-windows. It uses a data protocol that is a multidimensional generalization of the ACR-NEMA standards. We have tested it fairly well on SGI and Sun workstations. It runs also on IBM RS6000, HP 700 series and even PCs. We charge \$1,000 for the software which comes with source code and manuals. You can modify it and do whatever else you want as long as it is for your own noncommercial use. For further information contact:

Dr. Jayaram K. Udupa
Medical Image Processing Group
University of Pennsylvania, Department of Radiology
418 Service Drive - 4th Floor Blockley Hall
Philadelphia, PA 19104-6021
Phone: (215) 662-6780 FAX: (215) 898-9145

From: SIAM <tate@siam.org>
Subject: Contents: SIAM Mathematical Analysis
Date: Tue, 25 Jan 1994

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From: aanderson@siam.org
Subject: SIAM J. Control and Optimization
Date: Thu, 03 Feb 1994

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IPNet Digest Volume 1, Number 03 February 17, 1994

Today's Editor: Patricia K. Lamm
Michigan State University

Today's Topics:

IPNet On-Line Bibliography
NSF Undergraduate Research Program in Inverse Problems
International Conference, European Consortium for Mathematics in
Industry
Table of Contents: Math of Control, Signals, and Systems
Table of Contents: Computational and Applied Mathematics
(Matem Aplicada e Computacional)
Table of Contents: SIAM J. Computing

Submissions for IPNet Digest:
Mail to ipnet-digest@math.msu.edu

Information about IPNet:
Mail to ipnet-request@math.msu.edu

From: IPNet
Subject: bibliography
Date: Thu, 17 Feb 1994

We are in the process of establishing an on-line bibliography database for the IPNet, available via e-mail to the IPNet, as well as gopher and anonymous ftp. Optimally, the bibliography files will be cross-referenced by subject area, such as:

General theory of linear ill-posed problems
General theory of nonlinear ill-posed problems
Inverse scattering problems
Inverse heat conduction problems

and so on.

Before setting up the database, it would be helpful to receive suggestions of subject areas that might be included. Please send any COMMENTS and SUGGESTIONS regarding the bibliography database to:

ipnet-bib@math.msu.edu

Announcements will be made at a later date regarding the submission of bibliography files -- please do not send any bibliography files at this time.

From: Edward Curtis <curtis@math.washington.edu>
Subject: NSF Undergraduate Research Program in Inverse Problems
Date: Thu, 10 Feb 1994

Summer Research for Undergraduates
Department of Mathematics
University of Washington
Seattle, Washington 98195

The Department of Mathematics at the University of Washington will offer a summer program to introduce undergraduates to research in mathematics. This program is sponsored by the National Science Foundation under a Research Experiences For Undergraduates (REU) grant. The program will run from June 20, 1994 to August 12, 1994. At the University of Washington REU site, students will investigate inverse problems which arise in partial differential equations and discrete problems related to them. Briefly stated, our problem is that of determining the conductivity inside a region from measurements of currents and potentials on the boundary. The students will be introduced to various forms of this problem, through lectures and reading. They will also be given an introduction to some of the possible numerical techniques for solving these problems. The students will become acquainted with the computing equipment and software which is available for work on these problems and will use these tools to investigate methods of solution. They will work in small teams in consultation with the faculty members. This program is intended for highly motivated students, who are United States citizens and who will have completed their junior year by Spring, 1994. The following preparation is considered essential for admission to this program:

1. Linear algebra (including eigenvalues and eigenvectors)
2. Advanced (multivariable) Calculus
3. Differential equations (at the level of Boyce and DiPrima)
4. First year Physics
5. Experience using Fortran

Admission is competitive and will be based on motivation, demonstrated ability in classwork, and on letters of recommendation. Students admitted to this program will be given a stipend of \$2500 out of which they will have to pay approximately \$1200 for tuition, room, and board. There may also be a small allowance for travel depending on distance from Seattle. It is anticipated that this will be an intense program, and students should not enroll in other courses or have any part-time jobs during the duration of this program. On campus housing will be arranged for those that desire it. Students should not apply for admission to the University of Washington admissions office directly, but should send a completed application form to James A. Morrow at the Department of Mathematics. Deadline for applications is April 1, 1994.

For application and/or additional information call one of the following:

Ed Curtis 206-543-1945 email: curtis@math.washington.edu
Jim Morrow 206-543-1161 email: morrow@math.washington.edu
Brooke Miller 206-543-6830 email: miller@math.washington.edu

From: "PROF.HEINZ W. ENGL" <engl@indmath.uni-linz.ac.at>
Subject: European Consortium for Mathematics in Industry
Date: Tue, 08 Feb 1994

ECMI 94

The European Consortium for Mathematics in Industry (ECMI) holds its 8th International Conference at the University of Kaiserslautern, Germany, between September 6 and 10, 1994 (in cooperation with the German Mathematical Union, DMV).

The objective of the conference is to provide a forum for

the presentation of work on the applications of mathematics to industrial problems. It will provide a forum for academics and industrialists to meet and discuss mathematical problems of mutual interest. It should also give advanced students a first-hand impression of the challenges and opportunities for mathematicians in European industry.

The scientific program will focus mainly on seven topics, namely mathematical methods in

- aerospace industry
- automotive industry
- chemical industry
- chip production
- construction industry
- finance
- metallurgic processes.

The core of each topic is a special session consisting of one invited lecture and four selected lectures; contributed talks related to these topics will be placed on the afternoon following the respective special session. Contributed papers and minisymposia in other areas of industrial mathematics are also welcome.

If interested, please request registration material from the chairman of the organizing committee

Prof. Helmut Neunzert
Fachbereich Mathematik
Universitaet
POBox 3049
D-67653 Kaiserslautern, Germany
Fax: +49-631-2053052,
E-Mail: ecmi94@mathematik.uni-kl.de

The deadline for the submission of abstracts is April 10.

Prof. Heinz W. Engl, Linz, Austria
President of ECMI

From: sontag@control.rutgers.edu (Eduardo Sontag)
Subject: TOC, Math of Control, Signals, and Systems
Date: Mon, 7 Feb 1994

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From: demoura@lmgc.univ-montp2.fr (Carlos DEMOURA LMGC meca)
Subject: Contents of COMP APPLIED MATH (Matem Aplicada e Computacional)
Date: Fri, 4 Feb 1994

Computational and Applied Mathematics
(Matematica Aplicada e Computacional)

Edited by: SBMAC - Brazilian Soc. for Comp. and Appl. Mathematics (Rio)
Birkhauser Verlag (Boston)

Editors: J. Douglas, Jr. (Purdue, W. Lafayette), C.S. Kubrusly
(LNCC+PUC-RJ,Rio) and C.A. de Moura (LNCC, Rio)

Assoc. Editors: L.A. Medeiros (UFRJ, Rio), J.P. Paes-Leme (PUC-RJ+UERJ,
Rio), G. Perla-Menzala (LNNC+UFRJ, Rio)

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- A.L. Iusem & M. Teboulle
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 From: tate@siam.org
 Subject: Table of Contents, SIAM J. Computing, June 1993, vol 23 no.3
 Date: Tue, 15 Feb 1994

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----- end -----

Today's Editor: Patricia K. Lamm
Michigan State University

Today's Topics:

Suggested Topics for IPNet On-Line Bibliography
Question on the Backwards Heat Equation
Preprints Available via Anonymous ftp
Table of Contents: SIAM J. Matrix Analysis and Applications
Table of Contents: SIAM J. on Optimization
Table of Contents: SIAM J. Applied Mathematics
Table of Contents: Linear Algebra and its Applications;
Special Issues in Progress

Submissions for IPNet Digest:
Mail to ipnet-digest@math.msu.edu

Information about IPNet:
Mail to ipnet-request@math.msu.edu

From: IPNet
Date: Wed, 9 Mar 94

We are still in the early stages of setting up an on-line bibliography for the IPNet. Our eventual goal is to have a bibliography compatible with that being set up by the NaNet, enabling the use of common software to build the bibliography, cross-referencing with the NaNet, etc.

The following bibliography categories have been suggested to date (with obvious overlaps existing):

THEORY OF INVERSE/ILL-POSED PROBLEMS
Questions of existence/uniqueness
Regularization theory
Theory without numerics
Theory with numerics
Multi-dimensional problems

APPLICATIONS OF INVERSE/ILL-POSED PROBLEMS:
Electrocardiography
Inverse scattering problems
 Transient (time domain)
 Steady state (frequency domain)
 1 space dimension and >1 space dimension
 Electromagnetics
Viscoelasticity
Acoustics
Inverse heat conduction problems
General diffusive systems
Tomography (inverse Radon transform)

EXPERIMENTAL DESIGN OF INVERSE/ILL-POSED PROBLEMS:
Optimal experiment design

Send suggestions of further bibliography categories to:

ipnet-bib@math.msu.edu

Please do not send actual bibliographies at this time, only suggestions of proposed bibliography subject areas.

From: James F. Epperson <epperson@slick.math.uah.edu>
Subject: Backwards Heat Equation
Date: Wed, 2 Mar 94 14:56:04 CST

To save me and a colleague from the embarrassment of perhaps re-inventing the wheel, could someone direct me to a reference for what might be considered the "state-of-the-art" for solving the backwards heat equation?

Thanks in advance,

Jim Epperson
Mathematical Sciences Dept.
Univ. of Alabama-Huntsville

From: afosr@alphatech.com (Peyman Milanfar)
Subject: Two preprint available
Date: Mon, 7 Mar 94 13:06:23 EST

The following preprints are available by anonymous ftp to lids.mit.edu.
The files you want are here:

 /usr/users2/ftp/pub/ssg/papers/LIDS-P-2221.PS.gz
 and
 /usr/users2/ftp/pub/ssg/papers/LIDS-P-2209.PS.gz

You need to run gunzip on these files before printing.

%%%%%%%%%%%%%%%%%%%%%%%%

LIDS Technical Report Number LIDS-P-2221:
"A Moment-based Variational Approach to Tomographic Reconstruction"

By: Peyman Milanfar, W. Clem Karl, Alan S. Willsky
Submitted to: IEEE Transactions on Image Processing

Abstract: (edited for length)
In this paper we describe a variational framework for the tomographic reconstruction of an image from the Maximum Likelihood estimates of its orthogonal moments. We show how these estimated moments and their (correlated) error statistics can be computed directly, and in a linear fashion, from given noisy and possibly sparse projection data. Moreover, thanks to the consistency properties of the Radon transform, this two step approach (moment estimation followed by image reconstruction) can be viewed as a statistically optimal procedure.

%%%%%%%%%%%%%%%%%%%%%%%%

LIDS Technical Report Number LIDS-P-2209:
"Reconstructing Polygons from Moments with Connections to Array Processing"

By: Peyman Milanfar, George C. Verghese, W. Clem Karl, Alan S. Willsky

Submitted To: IEEE Transactions on Signal Processing

Abstract:

In this paper we establish a set of results showing that the vertices of any simply-connected planar polygonal region can be reconstructed from a finite number of its complex moments. These results find applications in a variety of apparently disparate areas such as computerized tomography and inverse potential theory, where in the former it is of interest to estimate the shape of an object from a finite number of its projections; while in the latter, the objective is to extract the shape of a gravitating body from measurements of its exterior logarithmic potentials at a finite number of points. We show that the problem of polygonal vertex reconstruction from moments can in fact be posed as an array processing problem, and taking advantage of this relationship, we derive and illustrate several new algorithms for the reconstruction of the vertices of simply-connected polygons from moments.

From: nelson@siam.org

Subject: SIAM J. Matrix Analysis and Applications 15-2

Date: Mon, 28 Feb 94 10:25:29 EST

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Nai-Kuan Tsao

Trust Region Problems and Nonsymmetric Eigenvalue Perturbations

Ronald J. Stern and Henry Wolkowicz

(This file may have been corrupted in transmission.

We apologize for any errors. -ed.)

From: nelson@siam.org

Subject: SIAM J. on Optimization 4-2

Date: Mon, 28 Feb 94 10:03:37 EST

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From: livewell@siam.org
Subject: SIAP 54-3 Table of Contents
Date: Wed, 23 Feb 94 08:31:49 EST

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A Processor-Shared Queue That Models Switching Times: Heavy Usage Asymptotics

Charles Knessl and Charles Tier

From: Richard Brualdi <brualdi@math.wisc.edu>

Subject: Contents: Linear Algebra and its Applications

Date: Thu, 3 Mar 1994 07:07:22

Contents: Linear Algebra and its Applications, Volume 199

A Brief Biography and Appreciation of Ingram Olkin

Leon Jay Gleser, Michael D. Perlman, S. James Press, and Allan R. Sampson

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Special Issues in Progress

1. Special Issue Honoring Marvin Marcus; special editors are Bryan E. Cain, Moshe Goldberg, Robert Grone, and Nicholas J. Higham. To appear as Volume 201, April 1, 1994.
2. Linear Systems and Control, Third Special Issue; special editors are A. C. Antoulas, P. A. Fuhrmann, M. L. J. Hautus, and Y. Yamamoto. Submission deadline: November 30, 1992. To appear as Volumes 203/204/205, May/June/July 1, 1994.
3. Special Issue Honoring Chandler Davis; special editors are Rajendra Bhatia, Shmuel Friedland, and Peter Rosenthal. Submission deadline: March 31, 1993. To appear as Volume 206, July 15, 1994.
4. Proceedings of the Third Conference of the International Linear Algebra Society at Pensacola; special editors are Dianne P. O'Leary, Leiba Rodman, and Helene Shapiro. Submission deadline: June 30, 1993. Details provided with the conference announcement.
5. Proceedings of the conference ``Matrices and Graphs'' in honor of John Maybee's 65th birthday, held at Boulder, Colorado, May 7, 8, 1993. Special editors: C. R. Johnson and J. R. Lundgren. Submission deadline: August 31, 1993. Details provided with the conference announcement.
6. Fourth Special Issue on Linear Algebra and Statistics; special editors are Jeffrey J. Hunter, Simo Puntanen, and George P. H. Styan. Submission deadline: June 30, 1993. Details in Volume 177, December 1992.
7. Proceedings of the workshop ``Nonnegative Matrices, Applications and Generalizations'' and the Eighth Haifa Matrix Theory conference held at Haifa, Israel, May 31-June 4 and June 7-June 10, 1993, respectively. Special editors: S. Friedland, D. Hershkowitz, and R. Loewy. Submission deadline: September 15, 1993. Details provided with the conference announcement.
8. Special Issue Honoring Miroslav Fiedler and Vlastimil Ptak; special editors are Wayne Barrett, Angelika Bunse-Gerstner, and Nicholas Young. Submission deadline: August 31, 1993. Details in Volume 179.
9. Proceedings of the Fourth Conference of the International Linear Algebra Society at Rotterdam; special editors are Harm Bart, Ludwig Elsner, and Andre Ran. Submission deadline November 30, 1994. Details provided with the conference announcement.
10. Special Issue Honoring J. J. Seidel: special editors are Aart Blokhuis, Willem H. Haemers, and Alan J. Hoffman. Submission deadline: August 30, 1994. Details in Volume 193, November 1, 1993.

Special issues are available to individuals at a reduced rate. For further information, please contact Yusuf Guvenc, Journals Customer Service, Elsevier Science Inc., 655 Avenue of the Americas, New York, NY 10010; Tel. 212-633-3955; Fax 212-633-3990.

Special Issues Vol. 199
----- end -----

Today's Editor: Patricia K. Lamm

Michigan State University

Today's Topics:

Preprint: The Trade-off Between Regularity and Stabilization in
Tikhonov Regularization.

Question: Xwave mailing list

Table of Contents: J. of Math. Systems, Estimation, and Control

Table of Contents: SIAM J. on Scientific Computing

Table of Contents: Numerical Algorithms

Table of Contents: SIAM J. Control and Optimization

Table of Contents: SIAM J. Math. Analysis

Table of Contents: Linear Algebra and its Applications

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From: Markus.Hegland@anu.edu.au (Markus Hegland)

Subject: Preprint available

Date: Thu, 31 Mar 1994

The following preprint is available in printed form from CMA, Australian National University, ACT 0200 Canberra Australia or as Postscript file by anonymous ftp to thrain.anu.edu.au (150.203.33.7). The file is in

pub/acreports/ACTR_33_03_94.ps.Z

You need to run uncompress on this file before printing.

%%%%%%%%%%%%%%%%%%%%%%%%

ANU Mathematics Report No. MR8-94:

The Trade-off Between Regularity and Stabilization in Tikhonov Regularization. By: M.T. Nair, M. Hegland and R.S. Anderssen

Abstract:

When deriving rates of convergence for the approximations generated by the application of Tikhonov regularization to ill-posed operator equations, assumptions must be made about the nature of the stabilization (i.e., the choice of the semi-norm in the Tikhonov regularization) and the regularity of the least-squares solutions which one looks for. In fact, it is clear from the works of Hegland (1992), Engl and Neubauer (1985) and Natterer (1984) that, in terms of the rate of convergence, there is a trade-off between the stabilization and the regularity. It is this matter which is examined in this paper using the best-possible worst-error estimates. The results of this paper provide better estimates than that of Engl and Neubauer (1985), and also include the best possible rate derived by Natterer (1984) in the context of Hilbert scales.

From: statman@apeiron.ufstat.ufl.edu (Charles D. Kincaid)
Subject: xwave[12] mailing list
Date: Thu, 17 Mar 94

Is there interest in a mailing list for the xwave1 and xwave2 software that mallat, etal. have written? I am using this and extending it for my own purposes. Every once in a while I have questions about it and there really isn't a source for answers. I program pretty well (IMHO) and thus can sift through the code. However, I know that not everyone wants to do that. Also, even after sifting through the code and determining what it does, there is sometimes still the question of why it does it.

If you believe that a mailing list for questions regarding xwave1 and xwave2 would be useful, please send me e-mail at statman@stat.ufl.edu. If there is suitable interest (a level that I haven't defined yet) I'll start one up.

Sincerely,
charles d. kincaid, Dept. of Statistics, Univ. of Florida

From: BESCHLER@SPINT.compuserve.com (Edwin F. Beschler)
Subject: Journal of Mathematical Systems, Estimation, and Control
Date: 12 Mar 94

JOURNAL OF MATHEMATICAL SYSTEMS, ESTIMATION, AND CONTROL

Contributors and readers are reminded that, beginning with Volume Four, JMSEC begins its transition to a partially electronic format. Specifically, after the transition, each issue will carry a number of four page, extended summaries. There will in the future be between 15-20 such summaries per issue. The FULL paper will be available only electronically via anonymous ftp. For access, the full ftp address is required along with the article identification number which is carried on the first page of the extended summary. For the time being, copies of the full electronic version will be free of charge. More details are included in the Editorial in Volume 4#1 or directly from the publisher, Birkhaeuser Boston, 675 Massachusetts Avenue, Cambridge, MA 02139. Also, see e-mail address above.

Articles appearing in SUMMARY form are available in COMPLETE form by anonymous ftp. Please follow these instructions:

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The ID # is the five digit identification number of the paper desired. It is located at the bottom of the first page of the Summary and is called "Retrieval Code."

%%%%%%%%%%
Volume Four, Number One

Editorial: A Transition to Electronic Publishing / Clyde F. Martin

Perspective Problems in System Theory and its Application to Machine Vision / Bijoy K. Ghosh, Mrdjan Jankovic and Y.T. Wu

Uniform Stabilization of the Kirchoff Plate Equation with Boundary Conditions Containing Moments of Inertia / Mary Ann Horn

A Relation Between Continuous Time-Varying and Discontinuous Feedback Stabilization / Jean-Michel Coron and Lionel Rosier

Shift of a Limit-Cycle in biology and Error-Equation / Daniel Claude

Monotone Approximations for Convex Stochastic Control Problems
Onsimo Hernandez-Lerma and Wolfgang J. Runggaldier

SUMMARY: Modelling and Controllability of Plate-Beam Systems
J. E. Lagnese

SUMMARY: Conditions for Average Optimality in Markov Control Processes with Unbounded Costs and Controls
Ra/'ul Montes-de-Oca and On/'esimo Hern/'andez-Lerma

Book Reviews: Brian F. Doolin
Numerical Methods for Conservation Laws, 2nd ed., by Randall J. Leveque

Volume Four, Number Two

An Application of Luenberger's Shuffle Algorithm to Regularization of Descriptor Systems by Proportional Feedback
V. Lovass-Nagy, R. Mukundan and R.J. Schilling

Towards Robustness and Genericity of Dynamic Feedback Linearization
Krysztof Tcho/'n

Finite Dimensional Filters with Nonlinear Drift I: A class of filters including both Kalman-Bucy filters and Benes filters / Stephen S.-T. Yau

On Discontinuous Strategies in Optimal Control Problems / D. B. Silin

A Convergence Theory for Fully Galerkin Approximations of Parabolic PDE in Inverse Problems / J.G. Wade

SUMMARY: Design of Finite-Dimensional Controllers for Infinite-dimensional Systems by Approximation / K.A. Morris

SUMMARY: Fixed Gain Off-line Estimators of ARMA Parameters
Laszlo Gerencser

SUMMARY: Extended Controller Form and Invariants of Nonlinear Control Systems with a Single Input / Wei Kang

SUMMARY: Necessary Condition and Genericity of Dynamic Feedback Linearization / P. Rouchon

From: tschoban@siam.org
Subject: SIAM J. on Scientific Computing Table of Contents 15-3
Date: Mon, 07 Mar 94

SIAM Journal on Scientific Computing
Volume 15, Number 3, May 1994

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Gary Ulrich, Layne T. Watson

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Analysis of V-Cycle Multigrid Algorithms for Forms Defined by Numerical
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Domain Decomposition Algorithms with Small Overlap
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Multilevel Schwarz Methods for the Biharmonic Dirichlet Problem
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Multilevel Algorithms for Constrained Compact Fixed Point Problems
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Preconditioned Richardson and Minimal Residual Iterative Methods for
Piecewise Hermite Bicubic Orthogonal Spline Collocation Equations
Bernard Bialecki

Towards Polyalgorithmic Linear System Solvers for Nonlinear Elliptic
Problems
Alexandre Ern, Vincent Giovangigli, David E. Keyes, and Mitchell D.
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Iterative Solution of the Eigenvalue Problem in Hopf Bifurcation for the
Boussinesq Equations
Hans D. Mittelmann, K.-T. Chang, D. F. Jankowski, and G. P. Neitzel

Preconditioned, Adaptive, Multipole-Accelerated Iterative Methods for
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K. Nabors, F. T. Korsmeyer, F. T. Leighton, and J. White

Iterative SVD-Based Methods for Ill-Posed Problems
C. R. Vogel, J. G. Wade

From: publish@baltzer.nl (Daniel Baltzer)
Subject: Numerical Algorithms, Volume 6, No. 3 - 4
Date: Thu, 17 Mar 1994

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Editor-in-Chief: Claude Brezinski

Jacobi matrices for measures modified by a rational factor
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Convergence of intermediate rows of minimal polynomial and reduced rank extrapolation tables / A. Sidi

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Asynchronous and corrected-asynchronous finite differences solutions of PDEs on MIMD multiprocessors
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Construction of iteration functions for the simultaneous computation of the solutions of equations and algebraic systems / A.-M. Bellido

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New control massic polygon of a B-rational curve resulting from a homographic change of parameter / J.-C. Fiorot, P. Jeannin and S. Taleb

Book reviews

Submissions of articles and proposals for special issues are to be addressed to the Editor-in-Chief:

Claude Brezinski
Laboratoire d'Analyse Numerique et d'Optimisation / UFR IEEA - M3 /
Universite des Sciences et Technologies de Lille /
59655 Villeneuve d'Ascq Cedex / France
E-mail: brezinsk@omega.univ-lille1.fr

postal address: Paris Drouot BP 18 / 75433 Paris Cedex 09 / France

Requests for FREE SPECIMEN copies and orders for Numerical Algorithms are to be sent to: E-mail: publish@baltzer.nl

From: aanderson@siam.org
Subject: SICON 32-4 Table of Contents
Date: Thu, 17 Mar 94

SIAM Journal on Control and Optimization
Volume 32, Number 4, July 1994
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An Adaptive Servomechanism for a Class of Infinite-Dimensional Systems
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The H-infinity-Problem with Control Constraints / Viorel Barbu

Positive Dependence of a Class of Multivariate Exponential Distributions
Ingram Olkin and Y. L. Tong

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Continuous-Time Algebraic Riccati Equation / Harald K. Wimmer

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Pointwise Sensor / Alexander Khapalov

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Optimal Angular Velocity Tracking with Fixed-Endpoint Rigid Body Motions
Michael J. Enos

Erratum: On the Optimal Tracking Problem / Ofer Zeitouni and Moshe Zakai

From: tate@siam.org
Subject: Table of Contents, SIAM J. Math. Anal., vol. 25, no. 4
Date: Fri, 25 Mar 94

SIAM Journal on Mathematical Analysis
Volume 25, Number 4, July 1994
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A Variational Problem for Harmonic Functions in Ring-Shaped Domains with Partially Free Boundary / Andrea Colesanti

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S. N. Antontsev and M. Chipot

Existence and Uniqueness of the C^1 Solution for the Thermistor Problem with Mixed Boundary Value / Guangwei Yuan and Zuhan Liu

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Stable Inhomogeneous Iterations of Nonlinear Positive Operators on Banach Spaces / Takao Fugimoto and Ulrich Krause

Canonical Forms of Differential Equations Free From Accessory Parameters / Yoshishige Haraoka

On Monotone Spline Approximation / X. M. Yu and S. P. Zhou

From: Richard Brualdi <brualdi@math.wisc.edu>
Subject: LINEAR ALGEBRA AND ITS APPLICATIONS
Date: Tue, 29 Mar 1994

LINEAR ALGEBRA AND ITS APPLICATIONS
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Arieh Lev

Toeplitz Minimal Rank Completions / Hugo J. Woerdeman

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IPNet Digest Volume 1, Number 06 May 5, 1994

Today's Editor: Patricia K. Lamm
Michigan State University

Today's Topics:

Upcoming Meetings on Inverse Problems (and Related Topics)
Third SIAM Conference on Control and Its Applications
Table of Contents: SIAM Journal on Matrix Analysis and Applications
Table of Contents: Advances in Computational Mathematics,
Table of Contents: SIAM Journal on Applied Mathematics
Table of Contents: SIAM Journal on Computing

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From: IPNet
Subject: Upcoming meetings
Date: Tue, 26 Apr 94

Calendar of Upcoming Meetings on Inverse Problems and Related Topics:

June 13-14 1994 The Sixth Inverse Problems in Engineering Seminar.
 Preceding the seminar is the following:
 Theoretical and Computational Aspects of Ill-Posed
 Problems Workshop, June 11 - June 12, 1994.
 Cincinnati, OH 45221-0025.

For more information: diego@dmurio.csm.uc.edu
woodbury@me.ua.edu
(or see the IPNet Digest Volume 1, Number 01)

June 27-July 1, 1994 GAMM-SIAM Conference on Inverse Problems in
Diffusion
 Processes, St. Wolfgang, Austria

For more information: engl@indmath.uni-linz.ac.at
(or see the IPNet Digest Volume 1, Number 01)

July 22-23, 1994 Symposium on Control Problems in Industry
 (SIAM and Institut National de Recherche en
 Informatique et en Automatique - INRIA).
 Holiday Inn by the Bay, San Diego, CA

For more information: meetings@siam.org
(or see the IPNet Digest Volume 1, Number 02)

July 27-30, 1994 2nd International Symposium, Inverse Problems in
Engineering Sciences (IPES-94)
 Osaka Institute of Technology, Osaka, Japan

For more information: ipes@kum.kyoto-u.ac.jp
(or see the IPNet Digest Volume 1, Number 02)

August 22-25, 1994 Second International Conference on Dynamic System
Identification and Inverse Problems
St. Peterburg, Russia

For more information: cosmos@sovamsu.sovusa.com
(or see the IPNet Digest Volume 1, Number 01)

Sept. 6-10, 1994 The European Consortium for Mathematics in Industry
(ECMI) 8th International Conference
University of Kaiserslautern, Germany

For more information: ecmi94@mathematik.uni-kl.de
(or see the IPNet Digest Volume 1, Number 03)

April 27-29, 1995 Third SIAM Conference on Control and Its
Applications
(SIAM Activity Group on Control and Systems Theory)
St. Louis, Missouri

For more information: see below.

Note: Information about how to receive a copy of an earlier IPNet Digest
may be obtained by sending a message to ipnet-request@math.msu.edu

From: flores@siam.org
Subject: Announcement Call for Papers
Date: Fri, 15 Apr 94

SIAM
Society for Industrial and Applied Mathematics
3600 University City Science Center
Philadelphia, PA 19104-2688

Third SIAM Conference on Control and Its Applications

Sponsored by SIAM Activity Group on Control and Systems Theory

April 27-29, 1995
Adam's Mark Hotel
St. Louis, Missouri

Call for Papers, Registration Information, and Abstract Form

Third SIAM Conference on Control and Its Applications

The Third SIAM Conference on Control and Its Applications will be organized around several major themes chosen to highlight both significant recent developments and challenging open questions in control theory, systems theory and their scientific, engineering and industrial applications.

Control theory is, by its nature, an interdisciplinary field with wide and varied applications. The conference structure will encourage interaction and the sharing of ideas and problems among the various participants.

Who Should Attend

The conference will bring together mathematicians, engineers, and scientists -- from academia, industry and government -- who are engaged in control and systems theory, research and applications.

Conference Themes

The major themes of the conference include:

- o Control of Large, Heterogeneous Computer Networks
- o Control in Dynamics and Mechanics
- o Convex Optimization in Control and Systems Theory
- o Control and Identification of Distributed Parameter Systems
- o Stochastic Control, Filtering and Estimation
- o Adaptive Control
- o Hybrid Event Systems
- o Discrete Event Systems
- o Robust Control
- o Industrial and Aerospace Applications
- o Nonlinear Systems
- o Dynamic Programming
- o Computational and Algorithmic Methods in Control
- o Control of Fluids

Organizing Committee

John B. Baillieul, Boston University
Anthony M. Bloch, Ohio State University
Christopher I. Byrnes, Washington University
Stephen L. Campbell, North Carolina State University
Eric Feron, Massachusetts Institute of Technology
Kevin A. Grasse, University of Oklahoma, Norman
Marc Q. Jacobs, Air Force Office of Scientific Research
Franz Kappel, Universitat Graz, Austria
Matthias Kawski, Arizona State University
John E. Lagnese (Conference Chair), Georgetown University
Irena M. Lasiecka, University of Virginia,
N. Harris McClamroch, University of Michigan, Ann Arbor
Bozenna Pasik-Duncan (Program Chair), University of Kansas
Steven E. Shreve, Carnegie Mellon University
Allan Tannenbaum, University of Minnesota, Minneapolis

Invited Presentations

Connecting Risk Sensitive Control Problems and Deterministic Games Through Singular Perturbations
Alain Bensoussan, University of Paris Dauphine and INRIA, France

Convex Optimization in Control and Systems Theory
Stephen P. Boyd, Information Systems Laboratory, Stanford University

Dynamical Systems and Their Associated Automata
Roger W. Brockett, McKay Laboratory, Harvard University

Control of Nonlinear Partial Differential Equations with Applications to Fluid Dynamics
John A. Burns, Center for Applied Mathematics, VPI&SU

Symmetry, Heteroclinic Cycles, Noise and Control
Philip Holmes, Mechanical and Aerospace Engineering, Princeton University

Why Is Controlling High-Speed Networks a Challenge?
Hans T. Kung, Division of Applied Sciences, Harvard University

Viscosity Solutions and Their Applications
H. Mete Soner, Department of Mathematics, Carnegie Mellon University

State-space and I/O Stabilization of Nonlinear Systems
Eduardo D. Sontag, Rutgers Center for Systems & Control, Rutgers University

Inverse Problems for Semilinear Elliptic Equations
Michael Vogelius, Department of Mathematics, Rutgers University

Minisymposia

A minisymposium is a two-hour session consisting of four presentations on a topic selected to augment the presentations of the invited speakers or develop a conference theme. A partial list of minisymposia and organizers follows.

Mechanical Systems
John B. Baillieul, Boston University

Nonholonomic Mechanics/Motion Planning
Anthony M. Bloch, Ohio State University and N. Harris McClamroch, University of Michigan, Ann Arbor

Differential Algebraic Equation Formulations of Control Problems
Stephen L. Campbell, North Carolina State University

Optimal Control/Motion Planning
Peter E. Crouch, Arizona State University

Numerical Methods in Stochastic Control
Paul G. Dupuis, Brown University

Control-theoretic Applications of Convex Optimization
Eric Feron, Massachusetts Institute of Technology

Geometric Methods in Nonlinear Systems Theory
Kevin A. Grasse, University of Oklahoma, Norman

Numerical Problems in Control Theory
William W. Hager, University of Florida, Gainesville

Combinatorial Methods in Nonlinear Control
Matthias Kawski, Arizona State University

Control of Nonlinear Distributed Parameter Systems
Irena M. Lasiecka, University of Virginia

Diffusion Approximations of Control Queueing Systems
H. Mete Soner and L.F. Martins, Carnegie Mellon University

Stochastic Theory - Adaptive Control
Bozenna Pasik-Duncan, University of Kansas

Control Applications to Finance

Steven E. Shreve, Carnegie Mellon University

Nonstandard Riccati Equations Arising in Boundary Control Problems -- Roberto Triggiani, University of Virginia

Numerical Issues in Control Applications of Convex Optimization
Lieven Vandenberghe, Katholieke Universiteit Leuven, Belgium

(Additional minisymposia are being planned)

How to Contribute

SIAM invites you to submit abstracts of papers to be considered for presentation at the conference in either of the following formats:

Contributed Presentations in Lecture or Poster Format

A lecture consists of a 15-minute oral presentation with an additional five minutes for discussion. A poster presentation consists of the use of visual aids, such as 8-1/2" x 11" sheets, mounted on a 4' x 6' poster board. Poster boards will be available at the conference. A poster session is two hours long. Each contributor must submit a title and a brief abstract not exceeding seventy five words. Plain TeX or LaTeX macros are available for submitting abstracts electronically. Contact SIAM at meetings@siam.org.

The organizing committee reserves the right to limit the number of contributed presentations a single speaker may present.

Deadline for submission of contributed abstracts: October 7, 1994.

Minisymposia

A minisymposium consists of four 25-minute presentations with an additional five minutes for discussion. Prospective minisymposium organizers are asked to submit a proposal consisting of a title, a description (not exceeding one-hundred words), and a list of speakers and titles of their presentations. Each minisymposium speaker must submit a 75-word abstract. To obtain a minisymposium proposal form, instructions and abstract forms, please complete and return the form below to meetings@siam.org.

Deadline for submission of minisymposium proposals: September 9, 1994.

Registration

The conference program and registration information will be available in late January, 1995. To ensure receiving your copy, please complete and return the form below.

Reply Form

Please return this form to:
SIAM, 3600 University City Science Center
Philadelphia, PA 19104-2688, U.S.A.
Telephone: 215-382-9800
Fax: 215-386-7999
E-Mail: meetings@siam.org

Third SIAM Conference on Control and Its Applications
April 27-29, 1995
Adam's Mark Hotel
St. Louis, Missouri

I am interested in giving a presentation.

Enclosed is a 75-word abstract. I prefer to give a poster presentation.

Enclosed is a 75-word abstract. I prefer to give a 20-minute presentation.

I am interested in organizing a minisymposium.
Send me a minisymposium proposal form.

I am interested in attending the conference. Send me the conference program, with the hotel and registration information.

I am a member of AACC AICHE
 IEEE Control Society ORSA
 SAE SIAM

Send me information about membership in SIAM.

Individual SIAM Activity Group on Control and Systems Theory

Academic Institution Corporate Institution

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From: nelson@siam.org
To: IPNET-DIGEST@MATH.MSU.EDU
Subject: SIAM J. MATRIX ANAL.APPL. 15-3 JULY 1994 TABLE OF CONTENTS
Date: Wed, 30 Mar 94

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The Generalized Order Linear Complementarity Problem
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A Matrix Approach to Finding a Set of Generators and Finding the Polar
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A Uniform Approach for the Fast Computation of Matrix-type Pade
Approximants -- Bernard Beckermann and George Labahn

A Block-Parallel Newton Method via Overlapping Epsilon Decompositions
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A Note on Extreme Correlation Matrices
Chi-Kwong Li and Bit-Shun Tam

On Preconditioning for Finite Element Equations on Irregular Grids
Alison Ramage and Andrew J. Wathen

The Reverse Bordering Method
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Theory of Decomposition and Bulge-Chasing Algorithms for the Generalized
Eigenvalue Problem -- David Watkins and Ludwig Elsner

The Diagonal Torus of a Matrix Under Special Unitary Equivalence
Robert C. Thompson

Fast Estimation of Principal Eigenspace Using Lanczos Algorithm
Guanghan Xu and Thomas Kailath

LCP Degree Theory and Oriented Matroids
Walter D. Morris, Jr.

Variation of the Unitary Part of a Matrix
Rajendra Bhatia and Kalyan Mukherjea

Upper Bound for the Real Part of Nonmaximal Eigenvalues of Nonnegative
Irreducible Matrices -- Shmuel Friedland and Leonid Gurvits

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From: publish@baltzer.nl (Daniel Baltzer)
Subject: Advances in Computational Mathematics, Volume 2, No. 3, 1994
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Advances in Computational Mathematics, Volume 2, No. 3, 1994, ISSN 1019
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Charles A. Micchelli (E-mail: cam@yktvmz.bitnet)

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From: tschoban@siam.org
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From: tate@siam.org
Subject: Table of Contents, SIAM J. Comput., Vol. 23, No. 4 Aug. 1994
Date: Fri, 22 Apr 94

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Today's Editor: Patricia K. Lamm
Michigan State University

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New Book on Inverse Problems
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Table of Contents: SIAM Journal on Control & Optimization
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Table of Contents: Mathematics of Control, Signals, and Systems
Table of Contents: Linear Algebra and its Applications

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From: ipnet
Subject: List of Talks at St. Wolfgang meeting
Date: Fri, 15 Jul 1994

At the recent GAMM-SIAM Conference on "Inverse Problem in Diffusion Processes" held in St. Wolfgang, Austria (June 27 -- July 1, 1994), the following talks were given. We thank local organizers H. W. Engl and O. Scherzer for providing this list, as well as for their work in providing an excellent conference.

LIST OF TALKS AND SPEAKERS

- G. Chavent: Multiscale Parametrization for the Determination of Conductivity from EM Prospecting Data
- S.I. Kabanikhin: Inverse Problems for Diffusion Approximation of Maxwell's Equations
- A. Lorenzi: Inverse Problems for Maxwell Equations in Dispersive Media
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- J. Skorek: Solution of the Inverse Boundary Problem of Heat Conduction Applying Discrete Eigenvalue Approach
- B. Lowe: Coefficient Recovery in a Parabolic Equation from Input Sources
- K. Zeman: Cooling and Heating of Slabs and Strips in Steel Production -- A Mathematical Playground for Inverse Problems
- W. Grever: Optimal Cooling Strategies in Continuous Casting with Variable Casting Speed
- A. Binder: Inverse Problems in Continuous Casting of Steel
- K. Kurpisz: Inverse Analysis of Heat Conduction with BEM and Regularization Involved
- R. Mahnken: On Parameter Identification for Visco-Plastic Material Models
- M. H\"anler: Identification of Boundary Data for the Ekman Model
- V.H. Reznik: Problems of Uniqueness and a Family of Aborting Operators
- B. Paneah: Degenerate Elliptic Boundary Value Problems with Diffusion Processes
- K. Kunisch: Numerical Methods for Parameter Estimation Problems
- B. Hofmann: Influence Factors of Ill-Posedness for Nonlinear Problems
- O. Scherzer: A Comparison of Convergence Criteria for Tikhonov Regularization and Landweber's Method for the Solution of Nonlinear Ill-Posed Problems
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- A.K. Louis: A Wavelet Solution of the Moment Problem
- R. Model: An Inverse Problem of Optical Tomography
- M. Hanke: Preconditioned Iterative Image Reconstruction
- R. Plato: The Discrepancy Principle for Iterative and other Methods
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- Ch. Grossmann: Identification of the Free Boundary in the Obstacle Problem by Monotone Iterations
- W. Ring: Identification of a Core from Boundary Data

 From: Shiro Kubo <kubo@saos.meim.eng.osaka-u.ac.jp>
 Subject: Book on Inverse Problems
 Date: Thu, 14 Jul 1994

The following book was published in 1993:

INVERSE PROBLEMS
 Editor: Shiro KUBO (Osaka University)

Atlanta Technology Publications
 P.O. Box 77032
 Atlanta, Georgia 30357 USA

ISBN # 1-883793-01-7

This monograph contains most papers presented at the Mini-Symposium on Inverse Problems, held in the International Conference on Computational Engineering Science in December 1992 at Hotel Furama, Hong Kong (ICES'92), together with several invited contributions. Each paper was peer reviewed by two or three independent reviewers.

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From: tschoban@siam.org
Subject: SIAP 54-5 Table of Contents
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Subject: SIAM Journal on Control & Optimization 32-5, 32-6
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From: sontag@control.rutgers.edu (Eduardo Sontag)
Subject: MCSS Table of Contents Vol 6, Number 3
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From: Richard Brualdi <brualdi@math.wisc.edu>

Subject: LAA contents
Date: Mon, 23 May 1994

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Systems and Control, Part I

Special Issue Editors: A. C. Antoulas, M. L. J. Hautus, P. A. Fuhrmann,
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Today's Editor: Patricia K. Lamm
Michigan State University

Today's Topics:

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New book on Computer Vision
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Table of Contents: SIAM Journal on Scientific Computing
Table of Contents: SIAM Journal on Computing
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Table of Contents: Mathematics of Control, Signals, and

Systems

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From: IPNet
Subject: ** Announcing the IPNet Abstract Archive **
Date: Thu, 11 Aug 94

In the coming weeks, the IPNet will begin operation of an abstract server which will store subscriber-submitted abstracts from preprints, published papers, and books on inverse/ill-posed problems. The abstracts will be available via e-mail, anonymous ftp, gopher, and World Wide Web. In the next digest, complete information will be given on how to send in abstracts to be archived, as well as how to retrieve an index of available abstracts and listings of the abstracts themselves.

The abstracts will be organized into one or more CATEGORIES, as given below:

THEORY (of inverse/ill-posed problems):

discrete theory
general theory
linear theory
multidimensional theory
nonlinear theory
noise reduction theory
regularization theory
stability theory

NUMERICS (pertaining to inverse/ill-posed problems):

numerical methods
software development

APPLICATIONS (of inverse/ill-posed problems):

acoustics applications
biological applications
electromagnetics applications

experimental design applications
general diffusion applications
geophysical applications
image reconstruction applications
inverse scattering applications
inverse heat conduction applications
tomography applications
medical applications
viscoelasticity applications

As may be expected, there are redundancies in some categories; suggestions of new or different categories will be appreciated, and may be e-mailed to:

ipnet-abstract@math.msu.edu

Please do not send in actual abstracts at this time -- complete information about submitting abstracts will be given in the next digest.

From: IPNet
Subject: Problems with 'who' fixed
Date: Thu, 11 Aug 94

We recently experienced difficulty with the 'who' command, but now believe that the problems have been fixed. The 'who' command is used to obtain a list of all members of the IPNet, including e-mail addresses. In order to obtain this list, you should send a message to

ipnet-request@math.msu.edu

with the following in the body of the message:

who

The membership list will be sent to you by return e-mail.

From: "Thomas I. Seidman" <SEIDMAN@UMBC2.UMBC.EDU>
Subject: request for references
Date: Fri, 29 Jul 1994

I would like a good set of references for work on the 'sideways heat equation' [=inverse heat conduction problem], including stuff from the engineering literature (especially if that might provide some details of the motivating examples of applications).

Please send references to seidman@math.umbc.edu or seidman@umbc.bitnet
.

Thanks,

Thomas I. Seidman (410)-455-2438 [for messages: -2412]
UMBC --- Dept. Math/Stat FAX: -1066
Baltimore, MD 21228

From: (Dr. James Beck) <beck@egr.msu.edu>
Subject: inverse heat conduction problem
Date: Thu, 21 Jul 94

I am interested in learning if anyone else is interested in formulating the inverse heat conduction problem as a digital filter. One way of looking at the problem is on p. 196 of Beck, Blackwell and St. Clair.

J. Beck
E-mail: beck@egr.msu.edu

From: "Bart M. ter Haar Romeny" <bart@cv.ruu.nl>
Subject: Nonlinear Diffusion in Computer Vision: new book
Date: Thu, 21 Jul 1994

Recently there was an inquiry to the source of anisotropic diffusion. This field, where the process of evolution (blurring) of the image is a function of the image information itself, is rather new. A number of approaches to this process are currently developed.

In September 1994 the book "Geometry-Driven Diffusion in Computer Vision" will appear, which is the first tutorial book in this field. The contributions are from the leading researchers in this area, in a transatlantic collaboration funded jointly by the NSF and Esprit. The book will be published by Kluwer. Information about availability can be acquired from Kluwer (Paul Roos, PhD, email: roos@wkap.nl).

For your information I include the table of contents. [Please write bart@cv.ruu.nl for a synopsis and an excerpt from the preface by Jan Koenderink. -Ed.]

"GEOMETRY-DRIVEN DIFFUSION IN COMPUTER VISION"
Editor: Bart M. ter Haar Romeny - Utrecht University, the Netherlands

Contents:

- Foreword by Jan Koenderink
- Introduction
- 1. Linear Scale-Space I: Basic Theory
Tony Lindeberg and Bart M. ter Haar Romeny
- 2. Linear Scale-Space II: Early Vision Operations
Tony Lindeberg and Bart M. ter Haar Romeny
- 3. Anisotropic Diffusion
Pietro Perona, Taka Shiota, and Jitendra Malik
- 4. Vector-Valued Diffusion
Ross Whitaker, Guido Gerig
- 5. Bayesian Rationale for the Variational Formulation
David Mumford
- 6. Variational Problems with a Free Discontinuity Set
Antonio Leaci and Sergio Solimini
- 7. Minimization of Energy Functional with Curve-Represented Edges
Niklas Nordstrom
- 9. Approximation, Computation and Distortion in the Variational Formulation
Thomas J. Richardson and Sanjoy K. Mitter
- 9. Coupled Geometry-Driven Diffusion Equations for Low-Level Vision.
Marc Proesmans, Eric Pauwels, and Luc van Gool
- 10. Morphological Approach to Multiscale Analysis: From Principles to Equations
Luis Alvarez and Jean Michel Morel
- 11. Differential Invariant Signatures and Flows in Computer Vision: A Symmetry Group Approach
Peter J. Olver, Guillermo Sapiro, and Allen Tannenbaum
- 12. On Optimal Control Methods in Computer Vision and Image Processing

- Benjamin Kimia, Allen Tannenbaum, and Steven Zucker
- 13. Non-Linear Scale-Space
Luc M. J. Florack, Alfons H. Salden, Bart M. ter Haar Romeny,
Jan J. Koenderink, and Max A. Viergever
 - 14. A Differential Geometric Approach to Anisotropic Diffusion
David Eberly
 - 15. Numerical Analysis of Geometry-Driven Diffusion Equations
Wiro J. Niessen, Bart M. ter Haar Romeny, Max Viergever
 - full bibliography (370 references)
 - full index (> 750 entries)

Bart M. ter Haar Romeny Ph.D. E-mail: bart@cv.ruu.nl
 3D Computer Vision Research Group Tel: +31-30-506695/507772
 University Hospital Utrecht, E02.222 Fax: +31-30-513399
 Heidelberglaan 100, 3584 CX Utrecht, The Netherlands

 From: "PROF.HEINZ W. ENGL" <engl@indmath.uni-linz.ac.at>
 Subject: Table of Contents: Surveys on Mathematics for Industry
 Date: Tue, 02 Aug 1994

Surveys on Mathematics for Industry (Springer-Verlag Vienna/New York)
 Table of Contents, Vol.4, Issues 1 and 2

Image processing and numerical methods for the approximation of terrain
 data B.Benninghofen

Front tracking for the supercooled Stefan problem
 G.H.Meyer and D.B.Singleton

Advances in scattered data interpolation T.A.Foley and H.Hagen

Mathematical modelling in the technology of laser treatment of materials
 V.I.Mazhukin and A.A.Samarskii

Heinz W. Engl, Managing Editor

Prof.Dr.Heinz W. Engl E-Mail: engl@indmath.uni-linz.ac.at
 Industriemathematik or na.engl@na-net.ornl.gov
 Institut fuer Mathematik secretary: nikolaus@indmath.uni-
 linz.ac.at
 Johannes-Kepler-Universitaet Phone: +43-(0)732-2468; ext.9219 or
 693, secretary: 9220; home: +43-(0)732-
 Altenbergerstrasse 69 245518
 A-4040 Linz Fax: +43-(0)732-2468855
 Oesterreich / Austria Telex: 2-2323 uni li a

 From: nelson@siam.org
 Subject: SIAM J. ON MATRIX ANALYSIS APPLICATIONS, VOL. 15, NO. 4
 Date: Mon, 20 Jun 94

SIAM J. ON MATRIX ANALYSIS AND APPLICATIONS
 Vol. 15, No. 4, October 1994

A Perturbation Analysis of the Generalized Sylvester Equation
 (AR-LB, DR-LE) = (C,F) Bo Kagstrom

Uniform Stability of Markov Chains Ilse Ipsen and Carl Meyer

An Efficient Algorithm to Compute Row and Column Counts for Sparse Cholesky Factorization John B. Gilbert, Esmond G. Ng, and Barry W. Peyton

Convexity and Concavity of the Perron Root and Vector of Leslie Matrices with Applications to a Population Model
Stephen J. Kirkland and Michael Neumann

Stable Numerical Algorithms for Equilibrium Systems
Stephen A. Vavasis

Some Convergence Properties of Matrix Sets
David P. Stanford and Jose Miguel Urbano

A Hybrid Algorithm for Optimizing Eigenvalues of Symmetric Definite Pencils
Jean Pierre A. Haeberly and Michael L. Overton

Row Sums and Inverse Row Sums for Nonnegative Matrices
Shmuel Friedland, Rohan Hemasinha, Hans Schneider, Jeffrey Stuart, Jas. Weaver

Collinearity and Total Least Squares Ricardo D. Fierro, James R. Bunch

Rank Robustness of Complex Matrices with Respect to Real Perturbations
M. A. Wicks and R. A. DeCarlo

Row Ordering for a Sparse QR Decomposition
Thomas H. Robey and Deborah L. Sulsky

Block-Triangularizations of Partitioned Matrices under Similarity/Equivalence Transformations
Hisashi Ito, Satoru Iwata, and Kazuo Murota

Numerical Range of Matrix Polynomials Chi-Kwong Li and Leiba Rodman

A Stable and Efficient Algorithm for the Rank-One Modification of the Symmetric Eigenproblem Ming Gu and Stanley C. Eisenstat

Fast Solution of Confluent Vandermonde Linear Systems Hao Lu

Condition and Accuracy of Algorithms for Computing Schur Coefficients of Toeplitz Matrices I. Gohberg, I. Koltracht, and D. Xiao

Eigenvalues of Block Matrices Arising from Problems in Fluid Mechanics
K. A. Cliffe, T. J. Garratt, and A. Spence

On the Perturbation of the Cholesky Factorization
Zlatko Drmac, Matjaz Omladic, and Kresimir Veselic

Towards a Divide and Conquer Algorithm for the Real Nonsymmetric Eigenvalue Problem Loyce Adams and Peter Arbenz

Gaussian Elimination with Partial Pivoting can Fail in Practice
Leslie V. Foster

A Hybrid Tridiagonalization Algorithm for Symmetric Sparse Matrices
Ian A. Cavers

From: tschoban@siam.org
Subject: SISC 15-5, 15-6, Table of Contents
Date: Tue, 05 Jul 94

SIAM Journal on Scientific Computing
Volume 15, Number 5, September 1994 CONTENTS

- Smoothing Spline Score Estimation Pin T. Ng
- Algebraic Multilevel Preconditioning of Anisotropic Elliptic Problems
Svetozar D. Margenov and Panayot S. Vassilevski
- A Lagrangian Random Choice Approach for Supersonic Real Gas Flows
Ching-Yuen Loh and Meng-Sing Liou
- Remark on Algorithms to Find Roots of Polynomials S. Goedecker
- The Schwarz Alternating Method for Singularity Problems Zi-Cai Li
- Two-Grid Iteration Methods for Linear Integral Equations of the Second
Kind on Piecewise Smooth Surfaces in R^3 Kendall E. Atkinson
- A Fast Method for the Numerical Evaluation of Continuous Fourier and
Laplace Transforms David H. Bailey and Paul N. Swarztrauber
- Spline Interpolation and Smoothing on Hyperspheres
H. J. Taijeron, A. G. Gibson, and C. Chandler
- Monotonic Smoothing Splines Fitted by Cross Validation S. N. Wood
- Uniform Refinement of a Tetrahedron Maria Elizabeth G. Ong
- The Laguerre Iteration in Solving the Symmetric Tridiagonal
Eigenproblem, Revisited T. Y. Li and Zhonggang Zeng
- Three-Dimensional Inverse Obstacle Scattering for Time Harmonic Acoustic
Waves: A Numerical Method Luciano Misici and Francesco Zirilli
- Sparse Preconditioned Iterative Methods for Dense Linear Systems
Yi Yan
- The Torus-Wrap Mapping for Dense Matrix Calculations on Massively
Parallel Computers Bruce A. Hendrickson and David E. Womble
- Errors When Shock Waves Interact Due to Numerical Shock Width
Ralph Menikoff
- Gauss-Seidel Iteration for Stiff ODES from Chemical Kinetics J. G.
Verwer

Volume 15, Number 6, November 1994 CONTENTS

- Quasi-Random Sequences and Their Discrepancies
William J. Morokoff and Russel E. Caflisch
- A Gradient Random Walk Method for Two-Dimensional Reaction- Diffusion
Equations Arthur Sherman and Michael Mascagni

Computing Gaussian Likelihoods and Their Derivatives for General Linear Mixed Models Russ Wolfinger, Randy Tobias, and John Sall

Thin Plate Splines with Discontinuities and Fast Algorithms for Their Computation David Lee and Jyh-Jen Horng Shiau

On the Parallel Implementation of Jacobi and Kogbetliantz Algorithms Jurgen Gotze

Efficient Variants of the Vertex Space Domain Decomposition Algorithm Tony F. Chan, Tarek P. Mathew, and Jian-Ping Shao

Solution of the Systems Associated with Invariant Tori Approximation II: Multigrid Methods Luca Dieci and Georg Bader

Performance of Several Optimization Methods on Robot Trajectory Planning Problems Joseph G. Ecker, Michael Kupferschmid, and Samuel P. Marin

An Efficient Block-Oriented Approach to Parallel Sparse Cholesky Factorization Edward Rothberg and Anoop Gupta

A Two-Phase Algorithm for the Chebyshev Solution of Complex Linear Equations Dirk P. Laurie and Lucas M. Venter

Preconditioning for Domain Decomposition through Function Approximation Mo Mu and John R. Rice

Using Krylov Methods in the Solution of Large-Scale Differential-Algebraic Systems Peter N. Brown, Alan C. Hindmarsh, and Linda R. Petzold

Efficient Spectral-Galerkin Method I. Direct Solvers of Second- and Fourth-Order Equations Using Legendre Polynomials Jie Shen

From: tate@siam.org
Subject: SIAM J. Comput., Table of Contents, October 1994
Date: Thu, 16 Jun 94

SIAM Journal on Computing
Volume 23, Number 5, October 1994 CONTENTS

Diagnosis of $t/(t+1)$ -Diagnosable Systems
A. Das, K. Thulasiraman, and V. K. Agarwal

Improved Algorithms for Bipartite Network Flow
Ravindra K. Ahuja, James B. Orlin, Clifford Stein, and Robert E. Tarjan

New Resultant Inequalities and Complex Polynomial Factorization
V. Y. Pan

Randomized Algorithms for Multiprocessor Page Migration
Jeffery Westbrook

Near-Optimal Time-Space Tradeoff for Element Distinctness
Andrew Chi-Chih Yao

Existence and Construction of Edge-Disjoint Paths on Expander Graphs
Andrei Z. Broder, Alan M. Frieze, and Eli Upfal

Separating Distribution-Free and Mistake-Bound Learning Models Over the Boolean Domain Avrim L. Blum

Computing with Noisy Information
Uriel Feige, Prabhakar Raghavan, David Peleg, and Eli Upfal

On Competitive Group Testing Ding-Zhu Du and Haesun Park

A Uniform Circuit Lower Bound for the Permanent Eric Allender and Vivek Gore

The Joint Distribution of Elastic Buckets in Multiway Search Trees
William Lew and Hosam M. Mahmoud

Tight Bounds on the Complexity of the Boyer-Moore String Matching Algorithm Richard Cole

From: nelson@siam.org
Subject: SIAM. J. OF OPTIMIZATION, VOL. 4, NO. 4 TABLE OF CONTENTS
Date: Fri, 22 Jul 94

Large-Scale, Nonlinearly Constrained Optimization on a 1024-Processor nCube
J. H. Glick and J. B. Rosen

Evaluation of Large-Scale Optimization Problems on Vector and Parallel Architectures Brett M. Averick and Jorge J. More

Serial and Parallel Multicategory Discrimination
Kristin P. Bennett and O. L. Mangasarian

An Extension of the DQA Algorithm to Convex Stochastic Programs
Adam J. Berger, John M. Mulvey, and Andrzej Ruszczyński

Problem Formulation for Multidisciplinary Optimization Evin J. Cramer, J. E. Dennis, Jr., Paul D. Frank, Robert Michael Lewis, Gregory R. Shubin

Coordination in Coarse-Grained Decomposition
R. DeLeone, R. R. Meyer, S. Kontogiorgis, A. Zakarian, and G. Zakeri

Parallel Branch-and-Bound Algorithms for General Mixed Integer Programming on the CM05 Jonathan Eckstein

Parallel Variable Distribution M. C. Ferris and O. L. Mangasarian

Parallel Factorization of Structured Matrices Arising in Stochastic Programming Elizabeth R. Jessup, Dafeng Yang, and Stavros A. Zenios

Structured Linear Least-Squares Problems in System Identification and Separable Nonlinear Data Fitting
Linda Kaufman, Garrett S. Sylvester, and Margaret H. Wright

Serial and Parallel Computation of Karush-Kuhn-Tucker Points via Nonsmooth Equations Jong-Shi Pang

A Stochastic Method for Constrained Global Optimization
Klaus Ritter and Stefan Schaffler

From: sontag@control.rutgers.edu (Eduardo Sontag)
Subject: Table of Contents, MCSS 6.4
Date: Tue, 19 Jul 94

MATH OF CONTROL, SIGNALS, AND SYSTEMS
TABLE OF CONTENTS, Vol. 7, No. 4

Differential stability and robust control of nonlinear systems
Tryphon Georgiou,

Symmetries of differential behaviors and finite group actions on free
modules over a polynomial ring Corrado Deconcini and Fabio Fagnani

On asymptotic model matching Daniel E. Miller and Edward J. Davison

Differential periodic Riccati equations: Existence and uniqueness of
nonnegative definite solutions A. Pastor and V. Hernandez

On general construction of reduced inverse for controlled systems
Yu-Fan Zheng and Li Cao,

----- end -----

Today's Editor: Patricia K. Lamm
Michigan State University

Today's Topics:

*** Announcing the IPNet Abstract Archive ***
International Symposium on Inverse Problems (ISIP-94)
Table of Contents: SIAM Journal on Math. Analysis
Table of Contents: SIAM Journal on Computing
Table of Contents: SIAM Journal on Applied Mathematics
Table of Contents: Computational and Applied Mathematics
Table of Contents: Linear Algebra and Its Applications

Submissions for IPNet Digest:
Mail to ipnet-digest@math.msu.edu

Information about IPNet:
Mail to ipnet-request@math.msu.edu

From: IPNet
Subject: IPNet Abstract Archive
Date: Fri, 2 Sep 94

Announcing the IPNet Abstract Archive

The IPNet Abstract Archive is now operational and ready to accept abstracts of papers, books, and preprints relating to research in the general area of inverse and ill-posed problems. Abstracts will be organized into one or more general categories (given below) and users will be able to retrieve abstracts via searches of categories, author names, or by general keyword searches.

Information is provided below on how to submit abstracts. In the next mailing, we will give information on how to retrieve archived abstracts or to conduct author or keyword searches of abstracts by e-mail.

*** Please support the IPNet Abstract Archive by submitting

*** abstracts of your past and present papers, books, and ***
*** preprints. All submissions related to the general area of ***
*** inverse and ill-posed problems are welcomed. ***

The following form should be used for submission to the ipnet of abstracts. The form should be filled out and mailed to:

ipnet-abstract-submit@math.msu.edu

Only one form should be sent in a given mailing. Use a new form (mailed to the same address) for each additional abstract submitted. The form will be returned to you if errors are found and, additionally, the form may be edited for length. Confirmation of successful abstract submission will be mailed to the first author listed.

Further information about the form and examples are given after the form.

.....cut here (beginning of form).....

CATEGORIES:

AUTHOR'S LAST NAME:

AUTHOR'S INITIALS:

AUTHOR'S E-MAIL ADDRESS:

CO-AUTHOR'S LAST NAME (in case of multiple authors):

CO-AUTHOR'S INITIALS (in case of multiple authors):

CO-AUTHOR'S E-MAIL ADDRESS (in case of multiple authors):

TITLE (of paper, manuscript, book):

YEAR (of publication, or manuscript date):

MONTH (of publication, or manuscript date):

LOCATION (journal reference, etc.):

ELECTRONIC LOCATION (how to get via ftp, gopher, etc.):

ABSTRACT:

..... cut here (end of form).....

More Information about the Abstract Submission Form

1. Description of topical categories: Use one or more of the following CATEGORIES (in any order), separated by commas:

- discrete theory acoustics applications
- general theory biological applications
- linear theory electromagnetics applications
- multidimensional theory experimental design applications
- nonlinear theory general diffusion applications
- noise reduction theory geophysical applications
- regularization theory image reconstruction applications
- stability theory inverse scattering applications
- inverse heat conduction applications
- software development medical applications
- numerical methods tomography applications
- viscoelasticity applications

Example (where 3 categories are specified):

CATEGORIES: linear theory, inverse heat conduction, general diffusion applications

2. Author and co-author information:

If there is only one author, only the AUTHOR fields are needed; the CO-AUTHOR fields should not be used. In the case of multiple authors, 'AUTHOR' always refers to the *first* author listed, while information

on subsequent authors should be given in the CO-AUTHOR fields. Confirmation that the abstract has been archived will be mailed to the e-mail address of the AUTHOR only.

Example: A paper by Joe S. Foobar, H. R. Jones, and E. B. Smith would include all of the following lines:

AUTHOR'S LAST NAME: Foobar
AUTHOR'S INITIALS: J. S.
AUTHOR'S E-MAIL ADDRESS: foobar@math.univ.edu
CO-AUTHOR'S LAST NAME: Jones
CO-AUTHOR'S INITIALS: H. R.
CO-AUTHOR'S E-MAIL ADDRESS: jones@eng.univ.edu
CO-AUTHOR'S LAST NAME: Smith
CO-AUTHOR'S INITIALS: E. B.
CO-AUTHOR'S E-MAIL ADDRESS: smith@cs.univ.edu

3. Location of paper:

LOCATION (journal reference, etc.) should give a complete bibliographical reference to the paper or book. If the paper is an unpublished preprint, indicate this. ELECTRONIC LOCATION should give information on how to receive a copy of the paper electronically.

Example:

LOCATION: SIAM J. Math. Analysis, Vol 10, pp 320 - 352, 1993.
ELECTRONIC LOCATION: Available in /pub/papers via anonymous ftp to math.univ.edu. Also available via gopher to math.univ.edu, or via an e-mail request to the author.

4. The abstract:

The ABSTRACT should be less than about 20 lines in length. TeX, LaTeX, and AMSTeX commands are allowed in the body of the abstract.

.....

Example #1: The following single-author abstract form would be mailed to ipnet-abstract-submit@math.msu.edu

CATEGORIES: linear theory, regularization theory, tomography applications

AUTHOR'S LAST NAME: Smith
AUTHOR'S INITIALS: A.B.
AUTHOR'S E-MAIL ADDRESS: smith@math.univ.edu

TITLE: Regularization theory for linear ill-posed problems, with

applications to tomography

YEAR (of publication, or manuscript date): 1993

MONTH (of publication, or manuscript date): December

LOCATION (journal reference, etc.): Preprint. Write author at
Department of Mathematics / State University / College Town, MA, 48922/
USA.

ELECTRONIC LOCATION (how to get via ftp, gopher, etc.): anonymous ftp
to
math.univ.edu, gopher (math.univ.edu) or by e-mail request to the
author

ABSTRACT: We present a general regularization theory for linear
ill-posed problems, with applications to tomography. The ideas extend
earlier work of the author in that more general linear problems may be
considered. In addition, numerical examples are given for numerous
typical tomography applications.

.....

Example #2: The following multiple-author abstract form would be mailed
to

ipnet-abstract-submit@math.msu.edu

CATEGORIES: general theory, inverse heat conduction applications

AUTHOR'S LAST NAME: Foobar

AUTHOR'S INITIALS: J. R.

AUTHOR'S E-MAIL ADDRESS: foobar@math.univ.edu

CO-AUTHOR'S LAST NAME: Jones

CO-AUTHOR'S INITIALS: S. R.

CO-AUTHOR'S E-MAIL ADDRESS: jones@cs.univ.edu

TITLE: Stable solution of the inverse heat conduction problem

YEAR: 1984

MONTH: March

LOCATION: SIAM J. Applied Math, Vol 20, pp 3-49.

ELECTRONIC LOCATION: anonymous ftp to math.univ.edu, gopher
(math.univ.edu) or by e-mail request to the author

ABSTRACT: We solve the inverse heat conduction problem via a Tikhonov
regularization approach, considering linear and nonlinear forms of the
problem. In the linear case we are able to prove a convergence result
with optimal rates of convergence; in the nonlinear case, we prove
some preliminary results. In both cases we present numerical evidence
of the success of this approach.

.....

After an abstract has been archived, changes or updates may be made to the abstract file. To obtain information about making changes, send a message to

ipnet-request@math.msu.edu

with the following in the body of the message:

get abstract-update-info

From: "Hubert.MAIGRE(meca)" <maigre@athena.polytechnique.fr>

Subject: ISIP '94

Date: Fri, 2 Sep 94

International Symposium on Inverse Problems (ISIP-94)

November 2-4, 1994

EDF-Clamart (5 km from Paris)

Chairmen: H.D.Bui (Ecole Polytechnique, Palaiseau France)
M.Tanaka (Shinshu University, Nagano, Japan)

Organisers: Shinshu University, Nagano, Japan
JASCOME, Japan LMS - Ecole Polytechnique, France
CNRS, France DER - Electricite de France
LMT - Ecole Normale Superieure de Cachan, France

Objectives:

The symposium features about 65 papers dealing with the following main topics:

- Shape determination
- System determination
- Identification of material properties
- Boundary conditions and sources identification
- Experimental strategy
- Defect identification
- Mathematical and computational aspects

Scientists and engineers interested in Inverse Problems and their applications to Engineering Mechanics and related fields are encouraged to participate to ISIP '94 and benefit from this opportunity of stimulating discussions and exchange of research ideas.

Registration:

The registration fee of the Symposium are as follows:

| | |
|---------------------------|----------|
| Before September 20, 1994 | 2 800 FF |
| After September 20, 1994 | 3 200 FF |

It includes the Symposium proceedings, the banquet, lunches and refreshments, transportation from Paris to the Symposium location.

For registration forms or further information please contact:

Dr. Hubert MAIGRE
Secretariat of ISIP '94
Laboratoire de Mecanique des Solides
Ecole Polytechnique

F-91128 PALAISEAU CEDEX
FRANCE

fax : (33)-1-69.33.30.26
e-mail: maigre@athena.polytechnique.fr

From: tate@siam.org
Subject: Contents, SIAM J. Math. Anal.
Date: Tue, 02 Aug 94

Contents, SIAM Journal on Math Analysis
Volume 25, Number 5, September 1994

The Influence of Domain and Diffusivity Perturbations on the Decay of
End Effects in Heat Conduction Changhao Lin and L. E. Payne

Elliptic Equations in Divergence Form Geometric Critical Points of
Solutions, and Stekloff Eigenfunctions G. Alessandrini and R. Magnanini

Approximation of Attractors by Algebraic or Analytic Sets
C. Foias and R. Temam

Investigations of Solutions of Nonlinear Hyperbolic Equations with a
Small
Nonlinearity and Applications A. Lada

Nonlinear Perturbation of Boundary Values for Reaction-Diffusion Systems:
Inertial Manifolds and Their Applications
Yoshihisa Morita, Hirokazu Ninomiya, and Eiji Yanagida

A Free Boundary Problem Modeling Thermal Instabilities: Well-Posedness
Michael L. Frankel and Victor Roytburd

On a Nonlinear Integrodifferential Drift-Diffusion Semiconductor Model
Jin Liang

The Stability of the Equilibrium of a Nonlinear Hill's Equation
Rafael Ortega

Matched Expansion Solutions of the First Order Turning Point Problem
L. A. Skinner

Discrete Spline Filters for Multiresolutions and Wavelets of L2
Akram Aldroubi, Murray Eden, and Michael Unser

Wavelet Analysis of Refinement Equations
Lars F. Villemoes

From: tate@siam.org
Subject: Table of Contents, SIAM J. Computing
Date: Fri, 26 Aug 94

Contents, SIAM Journal on Computing
Volume 23, Number 6, December 1994

A Grammar-Based Approach Towards Unifying Hierarchical Data Models
Marc Gyssens, Jan Paredaens, and Dirk Van Gucht

Selecting Heavily Covered Points

Bernard Chazelle, Herbert Edelsbrunner, Leonidas J. Guibas, John E. Hersberger, Raimund Seidel, and Micha Sharir

Distributed Algorithms for Unidirectional Networks

Yehuda Afek and Eli Gafni

Simple and Fast Algorithms for Linear and Integer Programs with Two Variables Per Inequality Dorit S. Hochbaum and Joseph (Seffi) Naor

Computing the Order of a Locally Testable Automaton

Sam Kim and Robert McNaughton

A Polynomial-Time Algorithm for the Perfect Phylogeny Problem When the Number of Character States is Fixed Richa Agarwala & David Fernandez-Baca

Priority Queues and Permutations M. D. Atkinson and Robert Beals

A Model for Asynchronous Shared Memory Parallel Computation

Naomi Nishimura

Tight Bounds on Oblivious Chaining Shiva Chaudhuri

Requirements for Deadlock-Free, Adaptive Packet Routing

Robert Cypher and Luis Gravano

On Languages Reducible to Algorithmically Random Languages

Ronald V. Book

A Fast Algorithm for Optimum Height-Limited Alphabetic Binary Trees

Lawrence L. Larmore and Teresa M. Przytycka

Improved Algorithms for Linear Inequalities with Two Variables Per Inequality

Edith Cohen and Nimrod Megiddo

From: tschoban@siam.org

Subject: SIAP 54-6 Table of Contents

Date: Fri, 26 Aug 94

Contents, SIAM Journal on Applied Mathematics

Volume 54, Number 6, December 1994

Geometrical Aspects of the Diffraction of Critically Incident Bulk Waves and Gaussian Beams R. H. Tew

The Gunn Effect: Instability of the Steady State and Stability of the Solitary Wave in Long Extrinsic Semiconductors

Luis L. Bonilla, Francisco J. Higuera, and Stephanos Venakides

Resolution and Stability Analysis of an Inverse Problem in Electrical Impedance Tomography - Dependence on the Input Current Patterns David C. Dobson and Fadil Santosa

On the Dynamics of a Closed Thermosyphon J. J. L. Velazquez

Resonant Mode Interactions and the Bifurcation of Combustion-Driven Acoustic Oscillations in Resonance Tubes Stephen B. Margolis

Pseudospectra of the Convection-Diffusion Operator
Satish C. Reddy and Lloyd N. Trefethen

A Generalized Secondary Frost Heave Model
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From: demoura@server01.lncc.br (Carlos Moura)
Subject: COMPUTATIONAL AND APPLIED MATHEMATICS contents
Date: Fri, 26 Aug 94

COMPUTATIONAL AND APPLIED MATHEMATICS (Matematica Aplicada e
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Publ. by Birkhauser and SBMAC - Brazilian Soc. for Comp. and Appl. Math.
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From: Richard Brualdi <brualdi@math.wisc.edu>
Subject: LAA-Vol207 Contents
Date: Mon, 20 Jun 1994

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IPNet Digest Volume 1, Number 10 October 1, 1994

Today's Editor: Patricia K. Lamm
Michigan State University

Today's Topics:

IPNet Abstract Server -- Questions, Information
New Book: Inverse Problems and Optimal Design in Industry
New book: Wavelets and other orthogonal systems with applications
Talks at Dynamic System Identification & Inverse Problems Meeting
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Table of Contents and Author Information:
Advances in Computational Mathematics
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Submissions for IPNet Digest:
Mail to ipnet-digest@math.msu.edu

Information about IPNet:
Mail to ipnet-request@math.msu.edu

From: IPNet
Subject: IPNet Abstract Archive
Date: Tue, 1 Oct 94

The IPNet Abstract Archive is an on-line repository for brief abstracts of preprints, published journal articles, books, etc., with the only requirement being that the subject relate to the general area of inverse problems and/or their applications.

It is hoped that the archive will:

- *** facilitate early dissemination of research results not yet published;
- *** provide information on how to get particular unpublished papers via e-mail, standard mail, or other electronic mean
- *** provide for a central location for information about past and present research in the field.

After the last Digest mailing, there were many questions about how to submit an abstract to the abstract server. The process is very easy: you simply fill out the information in an abstract "form" (a copy of which is given below) and e-mail the the form to

ipnet-abstract-submit@math.msu.edu

Your abstract will be stored in the IPNet Abstract Archive and categorized according to topic(s). Others will be able to retrieve the abstract via a electronic author search, keyword search, etc. More information about abstract retrieval and searches will be given in a future Digest.

Thanks to those who have already submitted abstracts. If you have not already submitted an abstract of a present or past paper, PLEASE CONSIDER SUPPORTING THIS EFFORT!

The following form should be used for submission of abstracts. Use a new form (mailed to the same address) for each additional abstract submitted. The form will be returned to you if errors are found and, additionally, the form may be edited for length. Confirmation of successful abstract submission will be mailed to the first author listed. Information about CATEGORIES is given below the form.

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| regularization theory | image reconstruction applications |
| stability theory | inverse scattering applications |
| | inverse heat conduction applications |
| software development | medical applications |
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From: "PROF.HEINZ W. ENGL" <engl@indmath.uni-linz.ac.at>
Subject: Book Announcement
Date: Mon, 12 Sep 1994

I want to draw your attention to the book

"Inverse Problems and Optimal Design in Industry"
(H.W.Engl and Joyce McLaughlin, editors),

which was just published by Teubner, Stuttgart. It contains (refereed) papers given at the ECMI-SIAM meeting on that topic preceding the SIAM Annual Meeting of 1993.

Heinz W. Engl

From: Gilbert G Walter <ggw@csd4.csd.uwm.edu>
Subject: New book: Wavelets and other orthogonal systems with applications
Date: Wed, 17 Aug 1994

This book written by G.G. Walter and published last month by CRC Press, is not about ill-posed problems per se. However, it was motivated in part by the need to find new approaches for such problems and contains a number of techniques that we hope will work. The table of contents is:

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12. Orthogonal Series in Statistics
13. Orthogonal Systems and Stochastic Processes

[Major chapter headings only; please write the author for a complete table of contents. -Ed.]

From: (Dr. James Beck) <beck@egr.msu.edu>
Subject: Talks from St. Petersburg meeting, Aug. 22-25, 1994
Date: Wed, 7 Sep 94

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From: tschoban@siam.org
Subject: SIREV 36-4 Table of Contents
Date: Fri, 09 Sep 94

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From: tate@siam.org
Subject: Table of Contents, SIAM J. Math Anal., Nov. 1994
Date: Wed, 21 Sep 94

Contents: SIAM Journal on Mathematical Analysis Vol. 25, No. 6, Nov 1994

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>From Accessory Parameters Yoshishige Haraoka

Smoothing Effects for Dispersive Equations Via a Generalized Wigner
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Characterization of the Smoothest Interpolant Borislav Bojanov

From: publish@baltzer.nl (Philip Pritchard)
Subject: ADVANCES IN COMPUTATIONAL MATHEMATICS
Date: Mon, 12 Sep 1994

Scope and instructions to authors

Publication areas of Advances in Computational Mathematics include computational aspects of algebraic, differential and integral equations, statistics, optimization, approximation, spline functions and wavelet analysis. Submissions are especially encouraged in modern computing aspects such as parallel processing and symbolic computation and application areas such as neural networks and geometric modeling.

All contributions should involve novel research. Expository papers are also welcomed provided they are informative, well written and shed new light on existing knowledge. The journal will consider the publication of lengthy articles of quality and importance. From time to time special issues devoted to topics of particular interest to the reader will be published with the guidance of a guest-editor. Ideas for special issues can be communicated to the Editors-in-Chief.

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Authors are cordially invited to submit their manuscripts in triplicate to John C. Mason, University of Huddersfield, School of Computing & Mathematics, Queensgate, Huddersfield HD1 3DH, United Kingdom E-mail: j.c.mason@hud.ac.uk All manuscripts will be refereed. The decision for publication will be communicated by John C. Mason. After acceptance of their paper, authors are invited to send a diskette with the TEX (or LATEX or AMS-TEX) source of their paper together with a hard copy including the letter of acceptance to John C. Mason. For papers concerning software an ASCII diskette is needed. contents: Advances in Computational Mathematics, Volume 2, No.3, 1994, ISSN 1019 7168 Editors-in-Chief: John C. Mason & Charles A. Micchelli

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RTable-based teste for Bessel function software A.J. Macleod

Requests for FREE SPECIMEN copies and orders for Advances in Computational Mathematics are to be sent to: E-mail: publish@baltzer.nl

From: publish@baltzer.nl (Philip Pritchard)
Subject: Annals of Numerical Mathematics
Date: Mon, 12 Sep 1994

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From: publish@baltzer.nl (Philip Pritchard)
Subject: APPROXIMATION THEORY AND ITS APPLICATIONS
Date: Mon, 12 Sep 1994

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----- end -----

Today's Editor: Patricia K. Lamm
Michigan State University

Today's Topics:

Retrieving Abstracts from the IPNet Abstract Server
Workshop on Parameter Identification and Inverse Problems
Journal Information: Inverse Problems
Table of Contents: Inverse Problems
Table of Contents: SIAM Journal on Mathematical Analysis
Table of Contents: SIAM Journal on Numerical Analysis
Table of Contents: Linear Algebra and Its Applications

Submissions for IPNet Digest:

Mail to ipnet-digest@math.msu.edu

Information about IPNet:

Mail to ipnet-request@math.msu.edu

From: IPNet

Subject: Retrieving Abstracts from the IPNet Abstract Server

Date: Mon, 7 Nov 94

The IPNet Abstract Server is up and running, although there is still a bit of a delay in storing abstracts (which have already been sent by IPNet subscribers) on the server. Abstracts of new and old papers, books, preprints, etc., which relate to the general area of inverse problems, are always welcome! Information about how to SUBMIT your abstracts can be obtained by consulting previous IPNet Digests or by sending a message to

ipnet-request@math.msu.edu

with the following in the body of the message:

send abstract-submit-info

RETRIEVAL of abstracts from the IPNet Abstract Server may be handled via e-mail, gopher, or www (information on the latter two will be given in a future digest). For e-mail RETRIEVAL of abstracts, or for searches of author names, keywords, etc., send a message to

ipnet-request@math.msu.edu

with one of the following statements in the body of your message (explanations and examples follow the statements; optional fields are in brackets '[...]'):

send index [from category]

This asks for a listing of the names of all abstract files, optionally from a given category. (Information on categories is given below.)

Examples: send index

send index from nonlinear theory

send index from medical applications

find author name [from category]

This searches for an author's last name; first name is not checked.

Examples: find author foobar
 find author Foobar
 find author Smith from general theory

find title name [from category]

This searches for a word or group of words appearing in an abstract title.

Example: find title Ill-Posed Problems
 find title ill-posed problems from linear theory

find keyword [from category]

This searches for any word or string of words appearing anywhere in the abstract. The word 'and' is not searched, but useful in determining the intersection of searches.

Example: find inverse problem from medical applications
 find regularization and inverse problem

After mailing your message, you will receive a list of abstract files that match your request. Abstract files are named according to the lastname and initials of the first author, the year of the manuscript, and whether this is the first, second, third, ..., abstract submitted by that author. For example, an abstract which has as its first author J.B. Foobar and which appeared in 1994 and was the third abstract archived with this author as first author, will be named:
foobar_jb_94.3

Once you have determined the filenames of interest to you, you may receive the contents of these files by sending a message to

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 send smith* from general theory
 send smith*
 (Note that '*' is a wildcard character when used with
 'send', so that all files by 'smith' are retrieved
 in the last 2 examples.)

For more information about abstract retrieval or about the general categories, send a message to ipnet-request@math.msu.edu with the following in the body of the message:

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-IPNet

From: "J. Gottlieb" <GN27@IBM3090.RZ.UNI-KARLSRUHE.DE>
Subject: Workshop on Parameter Identification and Inverse Problems
Date: Fri, 28 Oct 94

Announcement:

Workshop on Parameter Identification and Inverse Problems in
Hydrology, Geology and Ecology

Where: Karlsruhe, Germany
When: April 10-12, 1995

The workshop is the second meeting of the working group Applied
Mathematics In Geo- and ecOlogy (AMIGO). The aim of the workshop is
bringing Mathematicians and Applicants together. The first part of the
workshop is intended to present modern mathematical tools for nonlinear
inverse problems in form of review contributions. the second part is
devoted to applications and case studies.

Program Commitee: J.Gottlieb (Karlsruhe), M. Hanke (Karlsruhe),
B. Hofmann (Chemnitz), U. Hornung (Munich),
W. Kinzelbach (Heidelberg), P. Knabner (Erlangen).

Those interested in attending should contact

jgottlieb@ibm3090.rz.uni-karlsruhe.de

Johannes Gottlieb
Institute of Soil Mechanics and Rock Mechanics
Karlsruhe University
D-76049 Karlsruhe

From: Tony.J.Cox@ioppl.co.uk
Subject: Inverse Problems: Information and Table of Contents
Date: Tue, 4 Oct 1994

Inverse Problems

Inverse Problems is a bimonthly journal, published in February, April,
June, August, October and December by Institute of Physics Publishing.

It aims to combine theoretical and mathematical papers on inverse
problems with numerical and practical approaches to their solution. The
main audience is pure and applied mathematicians and physicists, but the
journal will also have more specialised appeal to workers in geophysics,
optics, radar, acoustics, communication theory and signal
processing. All inverse problems, inverse methods and data inversion
methods are within the scope of the journal, including applications to
tomography, systems identification, non-destructive evaluation and
non-linear evolution equations. The emphasis is on publishing original
contributions to methods of solving mathematical, physical and applied
problems. Because of the broad scope of the journal, it is hoped that
authors will provide sufficient introductory material to appeal to a
wider readership.

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Please contact the above address for further information on submitting work to the journal or on subscribing to it.

Inverse Problems Volume 10, Number 5, October 1994

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INVERSE PROBLEMS NEWSLETTER

From: tate@siam.org
Subject: Table of Contents, SIAM J. Math. Anal., vol. 26 no. 1
Date: Thu, 13 Oct 94

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From: tschoban@siam.org
Subject: SINUM 32-1 Table of Contents
Date: Thu, 27 Oct 94

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From: Richard Brualdi <brualdi@math.wisc.edu>
Subject: Linear Algebra and Its Applications, Volumes 210-213
Date: Mon, 31 Oct 1994

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----- end -----

Today's Editor: Patricia K. Lamm
Michigan State University

Today's Topics:

SPIE Ill-Posed Inverse Problems Symposium
Workshop on Parameter Identification and Inverse Problems
New METTI Group - Thermal Measurements and Inverse Techniques
New book on Inverse Heat Transfer Problems
Table of Contents: Inverse Problems in Engineering
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From: crj@sci2.cs.utah.edu (Chris Johnson)
Subject: Call for Papers - SPIE Ill-posed Inverse Problems Symposium
Date: Wed, 9 Nov 1994

CALL FOR PAPERS

Experimental and Numerical Methods for Solving Ill-Posed Inverse
Problems: Medical and Nonmedical Applications

Conference Chairs: Randall L. Barbour, SUNY/Brooklyn
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Program Committee: David Isaacson, Rensselaer Polytechnic Institute
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Michael V. Klibanov, Univ. of North Carolina/Charlotte
Christopher R. Johnson, Univ. of Utah
Robert V. McGahan, Rome Lab

Part of SPIE's 1995 International Symposium, July 9-14, 1995
San Diego Convention Center, San Diego, CA

Imaging methods are increasingly being applied to a wide range of applications that include clinical medicine, geophysics, remote sensing, and materials testing. Sources can be magnetic, acoustic, electrical, or electromagnetic in origin. These may be located external to the medium or inside. Detection modes may or may not be time dependent and can range from backscatter only to full tomographic measurement schemes. A common feature complicating many of these methods is the uncertainty regarding the volume of medium probed by the penetrating or emitted energy. Frequently, this uncertainty is due to the effects of scattering. Accurate knowledge of the energy distribution requires information about the medium, which is the unknown being examined. As a result, useful methods frequently must consider approximate solutions that represent compromises between computational effort, physical

accuracy of the modeling scheme, and quality and type of available data.

Principal topics of interest will fall into three main areas:

(1) mathematical aspects of inverse methods (e.g., dealing with ill-conditioning, limited noisy data, missing phase information, superresolution, etc.);

(2) modeling methods for forward and inverse scattering phenomena (e.g., approximate solutions to integral equations of scattering, finite difference time domain, and projection tomographic techniques); and

(3) interdisciplinary applications, including clinical medicine, optics, astronomy, remote sensing, etc.

This conference will bring together leading experts from universities, medical centers, government laboratories, and industry to discuss the latest developments in the diverse and fast developing field.

Topics will include, but are not limited to, the following areas:

Imaging modalities:

- * (MRI, PET, SPECT, EIT, optical, microwave, EEG/magnetic source, and acoustic imaging methods)
- * quantitative methods for imaging strong scatterers
- * inverse scattering problems
- * oxygen deficient states
- * monitoring of organ function (hepatic, cerebral, cardiac, renal, skeletal muscle, breast)
- * metabolite levels
- * tumor detection
- * laboratory modeling studies
- * time-resolved, harmonic, and time-independent illumination schemes
- * novel detection methods
- * multi-wavelength analysis

Methods for solving ill-posed problems:

- * explicit methods
- * iterative perturbation methods
- * derivation of homogeneous and inhomogeneous reference states
- * use of a priori information
- * projection methods
- * regularization techniques
- * parallel computational methods
- * application of neural net methods
- * layer stripping

Efficient numerical methods:

- * finite difference time domain
- * Finite Element
- * Monte Carlo
- * Discrete Ordinate
- * multigrid methods
- * hybrid methods to model complex media.

Abstract Due Date: December 19, 1994

Manuscript Due Date: June 12, 1995

Send one abstract via email in ascii format to: abstracts@spie.org

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5. Presentation: Oral Presentation or Poster Presentation
6. Abstract Text: 250 words
7. Brief Biography (principal author only): 50-100 words

From: "J. Gottlieb" <GN27@ibm3090.rz.uni-karlsruhe.de>
Subject: Call for Papers
Date: Sun, 04 Dec 94

WORKSHOP
ON
PARAMETER IDENTIFICATION AND INVERSE PROBLEMS IN
HYDROLOGY, GEOLOGY AND ECOLOGY

April 10-12, 1995

Sport School Schoeneck, Karlsruhe
Germany

WORKSHOP OBJECTIVES

The workshop is the second meeting of the Applied Mathematics in Geo- and Ecology working group.

Parameter identification and inverse problems are characterized by their ill-posed nature. Instabilities have to be regularized and ambiguities have to be compensated by a priori information. Consequently additional information from the applied problems must be introduced into the mathematical model, its discretization and into the algorithm of data inversion. Therefore, the interdisciplinary character of inverse problems is obvious. Moreover the tools originate from various subjects such as system and control theory, partial differential equations, nonlinear functional analysis, numerical analysis, measurement and computer technology.

The purpose of the workshop is bring together mathematicians and applied scientists working in hydrology, soil physics, geophysics, geology and ecology. The workshop will provide an opportunity for the presentation and discussion of recent developments in applied inverse theory, and it will be a forum where scientists from various disciplines can exchange ideas and experiences. The workshop will also include an offer to young scientists learning more about the methodology of inverse and ill-posed problems.

The research workshop is to be held in an environment conducive to informal discussion and interaction among all participants. To have a coherent program the following areas will be emphasized:

1. Mathematical modelling and identification of coefficients in linear and nonlinear partial differential equations (parabolic equations, diffusion-convection equations, Navier-Stokes equation):

Identifiability and uniqueness, stochastic approaches to inverse problems, regularization of nonlinear ill-posed problems, optimization

strategies, multiscale parametrization, parallel computation and numerical algorithms.

SPEAKERS (preliminary): G. Chavent (Paris), P. DuChateau (Fort Collins), M. Hanke (Karlsruhe), K. Kunisch (Berlin), K. Schittkowski (Bayreuth), U. Tautenhahn (Zittau), W. Zimmermann (Karlsruhe).

2. Case studies and applications of identification methods to nonlinearities and distributed systems in hydrology, soil physics, geophysical monitoring of flow and transport processes, geology, meteorology.

SPEAKERS (preliminary): A. Binley (Lancaster), J. Carrera* (Barcelona), H. Daniels (Darmstadt), W. Kinzelbach (Heidelberg), D.B. McLaughlin (MIT). *Unconfirmed

PROGRAMME and ORGANIZATION COMMITTEE:

J. Gottlieb (Karlsruhe), M. Hanke (Karlsruhe), B. Hofmann (Chemnitz), U. Hornung (Munich), W. Kinzelbach (Heidelberg), P. Knabner (Erlangen), G. Teutsch (Tuebingen).

WORKSHOP LANGUAGE: English

CALL FOR PAPERS:

Titles and abstracts of invited and contributed papers or complete papers should be received in Karlsruhe by

January 10, 1995.

If possible use LaTeX and e-mail for submission. Depending on demand, contributed papers will be allocated for short presentations or poster sessions. Contributed papers are preferred which are consistent with the aforementioned program topics and which are promising to be a good basis for an interdisciplinary discussion.

PROCEEDINGS: It is planned to publish all (reviewed) contributions in an electronical book.

For electronic registration forms and other enquiries regarding the meeting, including those on contributed papers, please contact:

jgottlieb@ibm3090.rz.uni-karlsruhe.de

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From: Denis.Maillet@ensem.u-nancy.fr (Denis_MAILLET)
Subject: Announcement: METTI Group
Date: Thu, 24 Nov 1994

Announcement: Creation and Actions of the METTI Group

METTI (Metrologie Thermique et Techniques Inverses - Thermal Measurements and Inverse Techniques) is a new group issued from the French heat transfer community. It was created in june 93 within GUT

(Groupement Universitaire de Thermique), a French academic association in heat transfer. The founding of METTI has been initiated by the COST Thermique, a scientific committee of CNRS, the French national science foundation. It is now supported by the French Department of Research and Higher Education.

METTI has been created in order to bring together scientists, from both industry and universities, that are interested in the development of methods of heat transfer measurement that are based on solution of inverse problems. The objectives of METTI concern the organization of any effective action that contributes to the development and the promotion of research, cooperation and education in this field. METTI will encourage rapprochements which could take place between heat transfer and other close fields that have the same interests for inverse problems associated with possible measurements. METTI is the French partner for international cooperation in this field.

In 1994, METTI has organized two scientific one-day meetings: one on inverse problems in heat transfer with a total of ten communications (jan 12, 1994) and another more specialized one on classification of inverse problems and on methodological aspects of solution of inverse problems based on thermal measurements (june 3, 1994). The proceedings of these two meetings (in French) can be ordered at the GUT secretariat in Nancy.

One of the first actions of METTI has consisted in collecting a large number (41) of examples of works involving inverse techniques: these examples cover a broad field of applications in ten French laboratories. All these examples have been put together in a booklet (in French) edited by GUT in 1994. For each example, an abstract gives some brief informations about the inverse problem considered, the measurement principle, the inverse technique used and the main experimental results. This booklet is not an exhaustive presentation of the works that have been done in France in this field, but rather an outline of what can be done to illustrate the interest of inverse techniques in heat transfer measurements.

The titles of these works are the following ones;

- 1 - Determination of liquid nitrogen boiling laws under atmospheric pressure (CETHIL)
- 2 - Determination of total emissivity of coatings on non-transparent surfaces (CETHIL)
- 3 - Determination of wall temperatures and fluxes between two dry rubbing solids (CETHIL)
- 4 - Determination of spectral radiative properties of scattering semi-transparent materials (CETHIL)
- 5 - Determination of a solidification or fusion front during a liquid/solid phase change (CETHIL)
- 6 - Identification of a wall heat flux in a 1D or 2D rectangular geometry (FAST)
- 7 - Identification of the wall heat flux and of the heat transfer coefficient in a quenching process (FAST)
- 8 - Identification of the evolution of a solid/liquid interface in a fusion process (FAST)
- 9 - Inverse problems in heat diffusion: I - Identification of boundary conditions (IUSTI)
- 10 - Inverse problems in heat diffusion: II - Identification of heat

transfer coefficients (IUSTI)
11 - Inverse problems in heat diffusion: Identification of a behaviour model (IUSTI)
12 - Study of the development of convective nucleate boiling (LMP)
13 - Calibration of heat flux sensors (LMP)
14 - Measurement of thermophysical properties of low conductivity materials without any sensor inside the samples (ISITEM)
15 - Determination of reticulation kinetics of an epoxy resin (ISITEM)
16 - Identification of the heat flux in the mould during injection moulding of thermoplastics (ISITEM)
17 - Inverse conduction in 2D-domains: a code using the MODULEF finite element library (ISITEM)
18 - Measurement of the thermal conductivity of a polymer with thermal contact resistances through a transient inverse method (ISITEM)
19 - Non-destructive testing of laminated composites through infrared thermography (LEMTA)
20 - Measurement of thermal diffusivity of anisotropic materials by the heat pulse technique (LEMTA)
21 - A simple apparatus for thermal diffusivity measurement of thin samples (LEMTA)
22 - Measurement of thermophysical properties of solids by a quasi-steady state method ("hot wire" and "hot plane") (LEMTA)
23 - Identification of thermal contact resistances in cylindrical geometry by the heat pulse method (LEMTA)
24 - Measurement of the instantaneous heat transfer coefficient by a transient inverse method (LEMTA)
25 - Measurement of the local heat transfer coefficient on a thin wall by an inverse transient method (LEMTA)
26 - Reconstruction of absorption profiles in an axisymmetrical semi-transparent medium (LET)
27 - Reconstruction of temperature profiles in flames (LET)
28 - Identification of the absorption spectrum of a semi-transparent medium through non-isothermal emission spectrometry (LET)
29 - One-dimensional temperature profiles through inversion of spectral thermal emission (LET)
30 - Temperature profiles of jets through inversion of the deflection field of rays measured through a speckle technique (LET)
31 - Parametric identification in steady and transient regimes (Kalman filter) (LET)
32 - Heat flux measurement in a combustion chamber by inverse heat conduction through Kalman's algorithm (LET)
33 - Inversion for defect measurement : I - 1D exact method (local diagnosis) (L3C)
34 - Inversion for defect measurement : II - 2D method (local diagnosis) (L3C)
35 - Inversion for defect measurement : III - 1D approximate method (rapid evaluation) (L3C)
36 - Determination of temperature fields through holographic interferometry in gaseous media (LPA)
37 - Estimation of average wall temperature and heat flux at the interface

- between a disk and a brake pad (LMP)
38 - Identification of thermophysical characteristics of protection materials of metal structures (LMP)
39 - Determination of wall temperatures and fluxes in high speed friction (ETCA/CREA)
40 - Determination of absorbed fluxes by ceramic coatings under intense illumination (ETCA/CRE)
41 - Determination of thermal conduction properties of ceramic coatings (ETCA/CRE)

Legend:

CETHIL =Centre de Thermique de l'INSA - Lyon
FAST = Fluides, Automatique et Systemes Thermiques - Orsay
IUSTI = Institut Universitaire des Systemes Thermiques Industriels - Marseille
LMP = Laboratoire de Mecanique Physique - Saint-Cyr l'Ecole
ISITEM = Laboratoire de Thermocinetique - ISITEM - Nantes
LEMTA = Laboratoire de Mecanique Theorique et Appliquee - Vandoeuvre-les-Nancy
LET = Laboratoire d'Etudes Thermiques - Poitiers
L3C = Laboratoire Capteurs, Caracterisation et CND - ONERA - Chatillon
LPA= Laboratoire de Physique Appliquee - Perpignan
ETCA/CREA = Centre de Recherche et d'Essais d'Arcueil

In 1995 (March 19-25, 1995 in Aussois in the Alps), METTI organizes a one-week spring school entitled "Thermal Measurements and Inverse Techniques: Efficient methods associated with a metrology of high quality" for the formation of engineers and research workers in this field.

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- - Edith Lang, GUT Secretariat for ordering the proceedings of the proceedings of the two 94 meetings or the METTI booklet (all in French): elang@ensem.u-nancy.fr

From: (Dr. James Beck) <beck@egr.msu.edu>
Subject: RE:Inverse Heat Transfer Problems, O.M. Alifanov
Date: Wed, 16 Nov 94

A new book on inverse problems has been published in English by Springer-Verlag. It is "Inverse Heat Transfer Problems" by O.M. Alifanov. It has a 1994 copyright but is a translation of a 1979 Russian book. Dean Alifanov is a well-known international figure in this area and is the leading figure in the Former Soviet Union in the application of iterative regularization to a variety of heat transfer problems.

From: (Dr. James Beck) <beck@egr.msu.edu>
Subject: Table of Contents: Inverse Problems in Engineering
Date: Tue, 15 Nov 94

INVERSE PROBLEMS IN ENGINEERING

Co-Editors-in-Chief

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From: Elizabeth Hyman <Hyman@world.std.com>
Subject: JMSEC Table of contents
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- Contributed by: Edwin F. Beschler <beschler@spint.compuserve.com>

From: sontag@control.rutgers.edu (Eduardo Sontag)
Subject: Table of Contents: Math of Control, Signals and Systems
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From: young@siam.org
Subject: SIAM J. Math. Anal., Vol. 26, No. 2, March 1995, Contents
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