Contents

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

Today's Topics:
     IPNet Membership
     An Ill-Conditioned Circuits Problem
     GAMM-SIAM Conference on Inverse Problems
     Conference on Dynamic System Identification & Inverse Problems
     Inverse Problems in Engineering Seminar
     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-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 (Saarbr|cken, 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 adresses 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 Inferometric 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

LINEAR ALGEBRA AND ITS APPLICATIONS
Contents Volumes 197, 198
Proceedings of the Second Conference of the International Linear
Algebra Society (Lisbon, 1992)

Preface 1

Peter Lancaster (Calgary, Alberta, Canada), Alexander S. Markus
(Beer Sheva, Israel), and Qiang Ye (Winnipeg, Manitoba, Canada)
Low Rank Perturbations of Strongly Definitizable Transformations
and Matrix Polynomials 3

 ------- end -------

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-Optica 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)   Blaise Morton
Department of Applied Mathematics   Honeywell Technology Center
University of Virginia   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

TABLE OF CONTENTS

Importance of Extremality
Erik J. Balder
------- end -------

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

        MATH OF CONTROL, SIGNALS, AND SYSTEMS
          TABLE OF CONTENTS, Vol. 6, No. 1

Luiz A.B. San Martin,
Invariant control sets on flag manifolds, pp. 41-61.

A. Le Breton and Dinh Tuan Pham,
Maximum Likelihood Estimation for Continuous Time Autoregressive Model by
  Relaxation on Residual Variances Ratio Parameters, pp. 62-75.

Christiaan Heij,
Identification of non-controllable systems from impulse response
measurements,
  pp. 76-97.

- J.M. Martinez,
On the convergence of the column-updating method

 - P. Gauzellino & J.E. Santos
Numerical methods for wave propagation in elastic and anelastic media

 - G. Aimez & P-A. Gremaud
On a penalty method for the Navier-Stokes problem in regions with moving
boundaries.

 - J.L. Menaldi & D.A. Tarzia
Generalized Lame-Clapeyron solution for a one-phase sourse Stefan
problem

 - L. Nachbin
Suplattices associated with convex sets, convex cones and affine spaces

 - A.L. Iusem & M. Teboulle
On the convergence rate of entropic proximal optimization methods

             Vol.12 N.3 (1993)

 - J. Baumeister & E.R.von Stockert
On a integral equation related to an inverse problem in
magnetocardiography

 - J. Douglas Jr. & J. Wang
A new family of mixed finite element spaces over rectangles

 - J.M. Stern & S.A Vavasis
Active set methods for problems in column block angular form

 - W.C. Connet, WL Golik & A.L. Schwartz,
A superconvergent scheme on irregular grids for systems of two-point
boundary value problems

From: tate@siam.org
Subject: Table of Contents, SIAM J. Computing, June 1993, vol 23 no.3
Date: Tue, 15 Feb 1994

CONTENTS

Top-Bottom Routing Around a Rectangle is as Easy as Computing Prefix
Minima
Omer Berkman, Joseph Jaja, Sridhar Krishnamurthy, Ramakrishna
Thurimella, and Uz Vishkin

Faster Approximation Algorithms for the Unit Capacity Concurrent Flow
Problem
With Applications to Routing and Finding Sparse Cuts
Philip Klein, Serge Plotkin, Clifford Stein, and Eva Tardos

The Extended Low Hierarchy is an Infinite Hierarchy
Ming-Jye Sheu and Timothy J. Long

Complexity of Network Reliability and Optimal Resource Placement Problems
Donald B. Johnson and Larry Raab

------- 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 embarassment 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

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

Computing the PSVD of Two 2 x 2 Triangular Matrices
Gary E. Adams, Adam W. Bojanczyk, and Franklin T. Luk

Nonlocal Perturbation Analysis of the Schur System of a Matrix
M. M. Konstantinov, P. Hr. Petkov, and N. D. Christov

An Algorithm for the Single-Input Pole Assignment Problem
Rafael Bru, Jose Mas, and Ana M. Urbano

Backward Error Estimates for Toeplitz Systems
J. M. Varah

Moore-Penrose Inversion of Square Toeplitz Matrices
Georg Heinig and Frank Hellinger

Fast Triangular Factorization and Inversion of Hankel and Related
Matrices with Arbitrary Rank Profile
Debajyoti Pal and Thomas Kailath

The Arnoldi Method for Normal Matrices
Thomas Huckle

Unicity of Biproportion
Louis de Mesnard

Characterizations of Scaling Functions I. Continuous Solutions
David Colella and Christopher Heil

Linear Operators Preserving Complex Orthogonal Equivalence on Matrices
Roger A. Horn, Chi-Kwong Li, and Dennis I. Merino

A Parallel Algorithm for Computing the Singular Value Decomposition of a
Matrix
E. R. Jessup and D. C. Sorensen

Accurate Downdating of Least Squares Solutions

A. Bjorck, H. Park, and L. Elden

Dynamical Systems that Compute Balanced Realizations and the Singular
Value Decomposition
U. Helmke, J. B. Moore, and J. E. Perkins

Iterative Consistency: A Concept for the Solution of Singular Systems of
Linear Equations
M. Hanke

Algorithms for Computing Bases for the Perron Eigenspace with
Prescribed Nonnegativity and Combinatorial Properties
Michael Neumann and Hans Schneider

On Rank-Revealing Factorisations
Shivkumar Chandrasekaran and Ilse Ipsen

Symmetric Toeplitz Matrices with Two Prescribed Eigenpairs
Moody T. Chu and Melissa A. Erbrecht

Perturbation Analysis of a Condition Number for Linear Systems
Zhi-Quan Luo and Paul Tseng

A Second-Order Perturbation Expansion for the SVD
Richard J. Vaccaro

Probabilistic Bounds on the Extremal Eigenvalues and Condition Number by
the Lanczos Algorithm
J. Kuczynski and H. Wozniakowski

An Error Model for Swarztrauber's Parallel Tridiagonal Equation Solver
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.)

Contents: SIAM J. on Optimization 4-2, May 1994

Line Search Procedures for the Logarithmic Barrier Function
Walter Murray and Margaret H. Wright

Superlinearly Convergent O(nL)-Iteration Interior Point Algorithms for
Linear Programming and the Monotone Linear Complementarity Problem
Kevin McShane

Convergence Properties of a Class of Rank-two Updates
Paul T. Boggs and Jon W. Tolle

Can Parallel Branch and Bound Without Communication be Effective?
Per S. Laursen

Convergence Theory of Nonlinear Newton)Krylov Algorithms

Peter N. Brown and Youcef Saad

On the Resolution of Linearly Constrained Convex Minimization Problems
Ana Friedlander, Jose Mario Martinez, and Sandra A. Santos

On Optimization Problems with Variational Inequality Constraints
J. V. Outrata

Triangular Decomposition Methods for Solving Reducible Nonlinear Systems
of Equations
J. E. Dennis Jr., Jose Mario Martinez, and Xiaodong Zhang

Extension of Hoffman's Error Bound to Polynomial Systems
Xiao-Dong Luo and Zhi-Quan Luo

Globally Convergent Inexact Newton Methods
Stanley C. Eisenstat and Homer F. Walker

An Interior Point Column Generation Method for Linear Programming Using
Shifted Barriers
John E. Mitchell

Predictor-Corrector Methods for a Class of Linear Complementarity
Problems
Sanjay Mehrotra and Robert A. Stubbs

Contents: SIAP 54-3

The Dynamics of a Tippe Top
A. C. Or

Blow-Up in a System of Partial Differential Equations with Conserved
First Integral. Part II: Problems with Convection
C. J. Budd, J. W. Dold, and A. M. Stuart

Large-Scale Averaging Analysis of Single Phase Flow in Fractured
Reservoirs
Zhangxin Chen

Shortcomings of Existing Finite Element Formulations for Subsurface
Water Pollution Modeling and Its Rectification: One-Dimensional Case
M. G. Rabbani and James W. Warner

Direct-Formulation Finite Element (DFFE) Method for Groundwater Flow
Modeling: Two-Dimensional Case
M. Ghulam Rabbani

Stability of Nonlinear Periodic Internal Waves in a Deep Stratified
Fluid
M. D. Spector and T. Miloh

The Effect of Microstructure on Elastic-Plastic Models
Lianjun An and Anthony Peirce

Estimations for Nonsymmetric Effective Coefficients

Gelu I. Pasa

The Computation of One-Parameter Families of Bifurcating Elastic
Surfaces
Frank E. Baginski

Reflection of Localized Beams From a Nonlinear Absorbing Interface
J. A. Powell, E. M. Wright, and J. V. Moloney

Stable Solutions for a Catalytic Converter
Helen Byrne and John Norbury

Fast Subsystem Bifurcations in a Slowly Varying Lienard System
Exhibiting Bursting
M. Pernarowski

Fixed-Point Smoothing of Scalar Diffusions I: An Asymptotically Optimal
Smoother
Y. Steinberg, B. Z. Bobrovsky, and Z. Schuss

A Processor-Shared Queue That Models Switching Times: Heavy Usage
Asymptotics
Charles Knessl and Charles Tier

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

Majorizations and Inequalities in Matrix Theory
T. Ando

Some Recent Developments on Majorization Inequalities in Probability and
Statistics
Y. L. Tong

Majorization in Economic Disparity Measures
Karl Mosler

Comments on and Complements to: Inequalities: Theory of Majorization
and Its Applications, by Albert W. Marshall and Ingram Olkin
James V. Bondar

Group Majorization, the Convex Hulls of Sets of Matrices and the
Diagonal Element - Singular Value Inequalities
Hector F. Miranda and Robert C. Thompson

A Simple Proof of the Generalized Schur Inequality
Khakim D. Ikramov

A Characterization of Matrix Groups That Act Transitively on
the Cone of Positive Definite Matrices
Steen A. Andersson and Michael D. Perlman

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

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

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

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:

    ADDRESS: trick.ntp.springer.de
    USER: anonymous (personal e-mail address)
    ACCESS: cd jmsec
                  get ID#.ps

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 Discontinous 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

CONTENTS

Rotating Waves from Hopf Bifurcations in Equations with O(2)-Symmetry
W. Wu, P. J. Aston, and A. Spence

Error-Minimizing Krylov Subspace Methods / Rudiger Weiss

Positivity Conditions for Quartic Polynomials
Gary Ulrich, Layne T.Watson

Special Section on Iterative Methods in Numerical Linear Algebra
Introduction / Tom Manteuffel and Steve McCormick

Multilevel Algorithms Considered as Iterative Methods on Semidefinite
Systems / Michael Griebel

Analysis of V-Cycle Multigrid Algorithms for Forms Defined by Numerical
Quadrature / J. H. Bramble, C. I. Goldstein, and J. E. Pasciak

On the Multilevel Adaptive Iterative Method / U. Rude

Multiplicative Schwarz Methods for Parabolic Problems / Xiao-Chuan Cai

Domain Decomposition Algorithms with Small Overlap
Maksymilian Dryja and Olof B. Widlund

Multilevel Schwarz Methods for the Biharmonic Dirichlet Problem
Xuejun Zhang

Multilevel Algorithms for Constrained Compact Fixed Point Problems
C. T. Kelley and E. W. Sachs

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.
Smooke

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
Three- Dimensional First-Kind Integral Equations of Potential Theory
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

Contents: Numerical Algorithms, Volume 6, No. 3 - 4, 1994
Editor-in-Chief: Claude Brezinski

Jacobi matrices for measures modified by a rational factor
S. Elhay and J. Kautsky

Convergence of intermediate rows of minimal polynomial and reduced rank extrapolation tables / A. Sidi

Implementation of a proximal algorithm for linearly constrained nonsmooth optimalization problems and computational results
J.C. Dodu, T. Eve and M. Minoux

Asynchronous and corrected-asynchronous finite differences solutions of PDEs on MIMD multiprocessors
D. Amitai, A. Averbuch, S. Itzikowitz and E. Turkel

Optimal shift parameters for periodic spline interpolation
G. Plonka

Construction of iteration functions for the simultaneous computation of the
solutions of equations and algebraic systems / A.-M. Bellido

Fast iterative methods for least squares estimations
M.K. Ng and R.H. Chan

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

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
CONTENTS

An Adaptive Servomechanism for a Class of Infinite-Dimensional Systems
Hartmut Logemann and Achim Ilchmann

Minimax-Optimal Strategies for the Best-Choice Problem When a Bound is Known for the Expected Number of Objects / T. P. Hill and D. P. Kennedy

The H-infinity-Problem with Control Constraints / Viorel Barbu

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

Observability and Observers for Nonlinear Systems
J. P. Gauthier and I. A. K. Kupka

Decomposition and Parametrization of Semidefinite Solutions of the
Continuous-Time Algebraic Riccati Equation / Harald K. Wimmer

A Strong Separation Principle for Stochastic Control Systems Driven by a
Hidden Markov Model / Raymond Rishel

Optimal Switching in an Economic Activity Under Uncertainty
Kjell Arne Brekke and Bernt Oksendal

L-infinity-Exact Observability of the Heat Equation with Scanning
Pointwise Sensor / Alexander Khapalov

Boundary Control of a One-Dimensional Linear Thermoelastic Rod
Scott W. Hansen

Control of Infinite Behavior of Finite Automata
J. G. Thistle and W. M. Wonham

Supervision of Infinite Behavior of Discrete-Event Systems
J. G. Thistle and W. M. Wonham

A Version of Olech's Lemma in a Problem of the Calculus of Variations
Arrigo Cellina and Sandro Zagatti

Characterization of the L2-Induced Norm for Linear Systems with Jumps
with Applications to Sampled-Data Systems
N. Sivashankar and Pramod P. Khargonekar

The Equivalence of Extremals in Different Representations of Unbounded
Control Problems / J. Warga and Q. J. Zhu

Controllability of a System of Two Symmetric Rigid Bodies in Three Space
Michael J. Enos

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

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

----

Validity of the Quasigeostrophic Model for Large-Scale Flow in the
Atmosphere and Ocean / Alfred J. Bourgeois and J. Thomas Beale

Reaction and Diffusion at a Gas/Liquid Interface, II
Heikki Haario and Thomas I. Seidman

On a Nonlinear Parabolic Problem Arising in Some Models Related to
Turbulent Flows / Jesus Ildefonso Diaz and Francois De Thelin

On a Globally Existing Solution to the Inviscid Burgers Equation with a
Nonlocal Term / Kazuo Ito

A Variational Problem for Harmonic Functions in Ring-Shaped Domains with
Partially Free Boundary / Andrea Colesanti

The Thermistor Problem: Existence, Smoothness, Uniqueness, Blowup
S. N. Antontsev and M. Chipot

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

The Qualitative Analysis of a Dynamical System Modeling the Formation of
Multilayer Scales on Pure Metals
H. C. Akuezue, R. L. Baker, M. W. Hirsch

Splay-Phase Orbits for Equivariant Flows on Tori / Renato E. Mirollo

A Velocity Functional for an Analysis of Stability in Delay-Differential
Equations / James Louisell

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

LINEAR ALGEBRA AND ITS APPLICATIONS
Contents Volume 202

------- end -------

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

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

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

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@kusm.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

[   ] Send me a SIAM membership poster to display on my
        institution's bulletin board.

[   ] Send me a free issue of SIAM News.

 Name
            First   Middle Initial   Last
Organization
Department
Address
City   State   Zip
Country
E-Mail
Telephone
Fax

If you fail to return this form, you may not receive further
information.

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

          SIMAX 15-3, JULY 1994 TABLE OF CONTENTS

Sensitivity of the Stationary Distribution of a Markov Chain
Carl D. Meyer

Strongly Inertia-Preserving Matrices -- Abraham Berman and Dafna Shasha

Dynamical Systems that Compute Balanced Realizations and the Singular
Value Decomposition -- U. Helmke, J. B. Moore, and J. E. Perkins

Trust Region Problems and Nonsymmetric Eigenvalue Perturbations
Ronald J. Stern and Henry Wolkowicz

The Generalized Order Linear Complementarity Problem
M. Seetharama Gowda and Roman Sznajder

A Matrix Approach to Finding a Set of Generators and Finding the Polar
(Dual) of a Class of Polyhedral Cones -- Carolyn Pillers Dobler

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
A. I. Zecevic and D. D. Siljak

Factorization of Matrix Polynomials with Symmetries
A. C. M. Ran and L. Rodman

Decomposability and Quotient Subspaces for the Pencil sL-M
V. L. Syrmos and Frank L. Lewis

Numerical Gradient Algorithms for Eigenvalue and Singular Value
Calculations
J. B. Moore, R. E. Mahony, and U. Helmke

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
C. Brezinski, M. Morandi Cecchi, and M. Redivo-Zaglia

Some Spectral Properties of Hermitian Toeplitz Matrices
William F. Trench

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

Block Downdating of Least Squares Solutions
L. Elden and H. Park

An Attainable Lower Bound for the Best Normal Approximation

Lajos Laszlo

A parallel implementation of the restarted GMRES iterative algorithm for
nonsymmetric systems of linear equations
R. Dias da Cunha and T. Hopkins

Time-marching numerical schemes for the electric field integral equation
on a straight thin wire -- P.J. Davies and D.B. Duncan

Acceleration property for the E-algorithm and an application to the
summation of series -- M. Prevost

Hankel operators and best Hankel approximation on the half-plane
X. Li

Contents

Plasma Carburization of an Axisymmetric Steel Sample
M. Gegick and G. W. Young

Long Time Evolution of Wavefronts in Random Media   -- Pawel Lewicki

Structural Reliability Analysis for One-Dimensional, Two-Phase Miscible
Flow --   David A. Coker and W. Brent Lindquist

Analysis of a Conservation PDE with Discontinuous Flux: A Model of
Settler --   J.-Ph. Chancelier, M. Cohen De Lara, and F. Pacard

Dynamics of Slender Viscoelastic Free Jets -- M. Gregory Forest and Q.
Wang

On the Dynamics of Aeroelastic Oscillators with One Degree of
Freedom   --   T. I. Haaker and A. H. P. Van Der Burgh

Computation and Stability of Fluxons in a Singularly Perturbed
Sine-Gordon Model of the Josephson Junction
David L. Brown, M. Gregory Forest, Brian J. Miller, and N. Anders
Petersson

Reconstruction of Semiconductor Doping Profile from Laser-Beam-Induced
Current Image -- Weifu Fang and Kazufumi Ito

Subharmonic Hysteresis and Period Doubling Bifurcations for a
Periodically Driven Laser -- Ira B. Schwartz and Thomas Erneux

A Sequence of Period Doublings and Chaotic Pulsations in a Free-Boundary
Problem Modeling Thermal Instabilities
M. Frankel, V. Roytburd, and G. Sivashinsky

Competition for a Single Limiting Resource in Continuous Culture: The
Variable-Yield Model -- Hal L. Smith and Paul Waltman

Random Generation of Stochastic Area Integrals
J. G. Gaines and T. J. Lyons

Asymptotic Approximations for a Queueing Network with Multiple Classes
Jing-Dong Mei and Charles Tier

Contents

A New Approach to Stable Matching Problems -- Ashok Subramanian

Wait-Free Consensus Using Asynchronous Hardware
Benny Chor, Amos Israeli, and Ming Li

Inferring Evolutionary History from DNA Sequences
Sampath K. Kannan and Tandy J. Warnow

Dynamic Perfect Hashing: Upper and Lower Bounds
Martin Dietzfelbinger, Anna Karlin, Kurt Mehlhorn, Friedhelm Meyer
Auf Der Heide, Hans Rohnert, and Robert E. Tarjan

Measure, Stochasticity, and the Density of Hard Languages
Jack H. Lutz and Elvira Mayordomo

Finding k Disjoint Paths in a Directed Planar Graph
Alexander Schrijver

Finite Automata Computing Real Functions
Karel Culik II and Juhani Karhumaki

On the Complexity of Bilinear Forms Over Associative Algebras
Nader H. Bshouty

A New Lower Bound Technique and its Application: Tight Lower Bound
for a Polygon Triangulation Problem -- Prakash Ramanan

On "Axiomatising Finite Concurrent Processes" -- Luca Aceto

The Complexity of Multiterminal Cuts -- E. Dahlhaus, D. S. Johnson, C.
H. Papadimitriou, P. D. Seymour, and M. Yannakakis

------- end -------

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

Today's Topics:
       List of Talks at St. Wolfgang, Austria, meeting
       New Book on Inverse Problems
       Table of Contents: SIAM Journal on Applied Mathematics
       Table of Contents: SIAM Journal on Control & Optimization
       Table of Contents: SIAM Journal on Numerical Analysis
          Table of Contents: Mathematics of Control, Signals, and Systems
       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: 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

F. Hettlich: Derivatives in Inverse Scattering Theory

G. Vainikko: The Inverse Problem of Ground Water Filtration

A. Bakushinskii: Some Inverse Problems for the Helmholz's Equation.
       Numerical Methods and Applications

R.S. Anderssen: Practical Shape Identification Problems Involving
       Diffusion Processes

G. Peichl: An Embedding Technique for a Shape Optimization Problem

H. Haario: Model Identification in Multiphase Catalytic Kinetics

D. Maillet: Use of Integral Transforms for the Estimation of a Space
       Varying Thermal Resistance Between two Slabs Starting from
       Surface Temperature Measurements

J.V. Beck: Function Specification Method for the Solution of the
    Inverse Heat Conduction Problem

P. Lamm: Future-Sequential Regularization Methods for Ill-Posed Volterra
    Equations

H.J. Reinhardt: Stable Numerical Solution to Linear Inverse Heat
    Conduction Problems by the Conjugate Gradient Method

T. Seidman: An Inverse Problem for a Class of Parabolic Equations

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

U. Tautenhahn: Error Estimates for Regularized Nonlinear Ill-Posed
    Problems

U. H\"amarik: On the A-Posteriori Parameter Choice in Regularization
    Methods

J. Gottlieb: Instationary Impedance Tomography and its Application to
    Groundwater Mechanics

L. Ballani: On the Magnetic Field Diffusion in the Earth Lower Mantle

G. Reiss: Solution of the Marchenko Equation for Inverse Scattering

A. Avdeev: Cooperative Inversion of Geophysical Data

V. Isakov: Identification of Discontinuous and Non-Linear Terms in
    Parabolic Equations

D. Tataru: On some New Unique Continuation Results and Applications

S. Vessella: H\"older Stability Result for an Inverse Problem for a
    Parabolic Equation

H.M. Yin: On Semilinear Parabolic Equations with Prescribed Energy

A. Ben Abda: Stability of some Inverse Geometrical Problems via Domain
    Derivative Techniques

D. Murio: Multidimensional Inverse Heat Conduction Problems

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

R. Hausding: On the Identification of Parameters in an Inverse Albedo
    Operator Problem

H. Stephan: Inverse Problems in Non-Equilibrium Processes

U. K\"uchler: An Ill-Posed Problem in Statistical Estimation Theory for
    a Class of Stochastic Differential Equations

T. Seidman: Applying the Method of ``Optimal Filtering'' to some
    Parabolic Equations

A. R\"osch: Identification of Nonlinear Heat Transfer Laws by Optimal
    Control

L. Eld\'en: Numerical Procedures for Solving the Sideways Heat Equation

P. DuChateau: Inverting the Coefficient to Data Mapping in a Nonlinear
    Diffusion Equation

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

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.

CONTENTS

Eigenfunctions   Y. Tada and Lantian Wang

IDENTIFICATION OF SYSTEM AND MATERIAL PROPERTIES

A Sequence of Inverse Eigenproblems   G.M.L. Gladwell

System Identification of a Skin-Mounted Accelerometer for Inverse
Diagnostics   H.R. Busby and D.M. Trujillo

Inverse Analysis by Means of Neural Network and Computational Mechanics:
Its Application to Structural Identification of Vibrating Plate
S. Yoshimura and G. Yagawa

An Inverse Problem for Euler-Bernoulli Beam Equations with Damping
S. Nakagiri

Correction of Finite Element Models Using Experimental Modal Data for
Vibration Analysis   M. Okuma and Sohn Kukil

Finite Element Based Inversion Schemes for Estimating Distributions of
Elastic Constants   S. Kubo, K. Ohji and K. Konishi

NONINVASIVE AND NONDESTRUCTIVE EVALUATIONS

An Inverse Analysis Method Applied to Estimating Unknowns in Transient
Heat Conduction Fields   M. Tanaka, M. Nakamura and H. Ishikawa

Residual Plastic Strains in Structures - Nondestructive Evaluation from
Measured Boundary Data   T. Mura and S.-C. Hsieh

Analysis of Heat Conduction Inverse Problem Based upon Infrared
Temperature Measurement   M. Shiratori, M. Harada and T. Kuwajima

----
                 Contents

Korteweg-De Vries Equation and Their Stability
Lianger Gong and Samuel S. Shen

Chaotic Pulse Trains   N. J. Balmforth, G. R. Ierley, E. A. Spiegel

Level Sets of Viscosity Solutions: Some Applications to Fronts and
Rendez-Vous Problems   M. Falcone, T. Giorgi, and P. Loreti

Dynamics of Interfaces in Competition-Diffusion Systems
S.-I. Ei and E. Yanagida

On the Evolution of Periodic Plane Waves in Reaction-Diffusion
Systems of (lambda)-(omega) Type   Jonathan A. Sherratt

The Existence of Spiral Waves in an Oscillatory Reaction-Diffusion
System   Joseph Paullet, Bard Ermentrout, and William Troy

Stability and Bifurcations of Equilibria in a Multiple-Delayed
Differential Equation   Jacques Belair and Sue Ann Campbell

Turing Instability in Competition Models with Delay I: Linear Theory
S. Roy Choudhury

Analysis of Spatial Structure in a Predator-Prey Model with Delay
II: Nonlinear Theory   S. Roy Choudhury

On the Solutions of a Class of Continuous Linear Programs
Edward J. Anderson and Andrew B. Philpott

The Riccati Equation for Optimal Control Problems with Mixed
State-Control Constraints: Necessity and Sufficiency   Vera Zeidan

A Multistate, Multicontrol Problem with Unbounded Controls
J. R. Dorroh and Guillermo Ferreyra

Numerical Approximations for Hereditary Systems with Input and
Output Delays: Convergence Results and Convergence Rates
A. Manitius and H. T. Tran

Root Locus and Boundary Feedback Design for a Class of Distributed
Parameter Systems   D. Gilliam, Christopher I. Byrnes, Jianqiu He

Optimal Controls of Navier-Stokes Equations
Mihir Desai and Kazufumi Ito

Necessary Conditions for Optimal Control of Stochastic Systems with
Random Jumps   Shanjian Tang and Xunjing Li

Nonsmooth Optimum Problems with Constraints   Zs. Pales and V. M. Zeidan

Stability of Recursive Stochastic Tracking Algorithms   Lei Guo

Uniform Exponential Stability and Approximation in Control of a
Thermoelastic System   Zhuangyi Liu and Songmu Zheng

Asymptotic First Hitting Time Distribution of Annealing Processes
Christian Mazza

The Asymptotic Behavior of Simulated Annealing Processes with
Absorption   Tzuu-Shuh Chiang and Yunshyong Chow

Volume 32, Number 6, November 1994 -- CONTENTS

for Mixed Boundary Value Problems for the Laplace Equation in R3
I. Babuska, T. von Petersdorff, and B. Andersson

A Convergent Finite-Difference Scheme for the Navier--Stokes
Equations of One-Dimensional, Nonisentropic, Compressible Flow
Jing Zhao and David Hoff

Stability of the Fractional Step O-Scheme for the Nonstationary
Navier--Stokes Equations   Petr Kloucek and Franz S. Rys

Stable Numerical Boundary Conditions for Stokes Equations
Kalman Z. Meth

Fast Iterative Solution of Stabilised Stokes Systems Part II: Using
General Block Preconditioners   David Silvester and Andrew Wathen

Least-Squares Mixed Finite Elements for Second-Order Elliptic
Problems   A. I. Pehlivanov, G. F. Carey, and R. D. Lazarov

A Pseudospectral Three-Dimensional Boundary Integral Method Applied
to a Nonlinear Model Problem from Finite Elasticity
M. Ganesh, I. G. Graham, and J. Sivaloganathan

Numerical Treatment of Subspace-Breaking Takens--Bogdanov Points
with Nonlinear Degeneracies   Dasa Janovska

A Class of Variable-Step Explicit Nordsieck Multivalue Methods
K. Burrage and P. W. Sharp

Runge--Kutta Methods for Dissipative and Gradient Dynamical Systems
A. R. Humphries and A. M. Stuart

A Sensitivity Analysis for Least-Squares Ill-Posed Problems Using
the Haar Basis   Jun Liu

Computation of the Complex Error Function   J. A. C. Weideman

----
From: sontag@control.rutgers.edu (Eduardo Sontag)
Subject: MCSS Table of Contents Vol 6, Number 3
Date: Fri, 3 Jun 94

            MATH OF CONTROL, SIGNALS, AND SYSTEMS
               TABLE OF CONTENTS, Vol. 6, No. 3

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

CONTENTS VOLUMES 203-204

CONTENTS VOLUMES 205-206

M. A. Peters and A. A. Stoorvogel

Acausal Models and Balanced Realizations of Stationary Processes
Giorgio Picci and Stefano Pinzoni

A Class of Hamiltonian-Symplectic Methods for Solving the Algebraic
Riccati Equation   Allen C. Raines III and David S. Watkins

Dynamical Structures on Pencils, Poles, and Fundamental Subspaces
Cheryl B. Schrader

Hankel-Norm Approximation and Control Systems
J. A. Sefton and R. J. Ober

Continuity of Singular Perturbations in the Graph Topology
J. de Does and J. M. Schumacher

On Low-Complexity Approximation of Matrices
Alle-Jan van der Veen and Patrick Dewilde

A Cell Structure for the Set of Autoregressive Systems
Xiaochang Wang and Joachim Rosenthal

A Behavioral Approach to Balanced Representations of Dynamical Systems
Siep Weiland

A Galois Correspondence Between Sets of Semidefinite Solutions of
Continuous-Time Algebraic Riccati Equations   Harald K. Wimmer

On the Stability Hyperellipsoid of a Schur Polynomial
Q.-H. Wu and M. Mansour

(J, J')-Lossless Factorization for Descriptor Systems
Xin Xin and Hidenori Kimura

Frequency Responses for Sampled-Data Systems - Their Equivalence and
Relationships   Yutaka Yamamoto and Mituhiko Araki
------- end -------

IPNet Digest   Volume 1, Number 08   August 11, 1994

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

Today's Topics:

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

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

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
     biologicalapplications
     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 exerpt from the preface by Jan
Koenderink.  -Ed.]

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

Contents:

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

        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,
Altenbergerstrasse 69               secretary: 9220; home: +43-(0)732-
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

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 Syummetric 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

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

Volume 15, Number 6, November 1994  CONTENTS

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

------------------------------

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

------------------------------

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 Ruszczynski

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 CM©5    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 Nonliner 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

------------------------------

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

------- 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

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

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

Selecting Heavily Covered Points
Bernard Chazelle, Herbert Edelsbrunner, Leonidas J. Guibas, John E.
Hershberger, 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

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
Andrew C. Fowler and William B. Krantz

Numerical Simulation of Uniaxial Compression of a Granular Material
with Wall Friction   Carl L. Gardner and David G. Schaeffer

Algorithms for the Nonclassical Method of Symmetry Reductions
Peter A. Clarkson and Elizabeth L. Mansfield

Stable Rotating Waves in Two-Dimensional Discrete Active Media
Joseph E. Paullet and G. Bard Ermentrout

Exact and Asymptotic Solutions for the Time-Dependent Problem of
Collective Ruin I   Charles Knessl and Craig Steven Peters

Heavy Traffic Asymptotics for a Gated, Infinite-Server Queue with
Uniform Service Times   Xiaoming Tan and Charles Knessl

Variance Reduction for Simulated Diffusions   Nigel J. Newton

----

Generalizations of Bendixson's Negative Criterion   Andrei Breazna

Some Remarks on Wavelet Interpolation   S. Bertololuzza and G. Naldi

A New Method for Solving Nonlinear Underdetermined Systems
Zhijian Huang

A Local Convergence Theorem for Nonlinear ABS Algorithms
N. Deng, E. Spedicatto and M. Zhu

On Some Degenerate Quasilinear Wave Equations with Time Dependent Linear
Damping   Y. Ebihara and M. Kurokiba

Unilateral Problem for the Navier-Stokes Operators in Noncylindrical
Domains
M. C. Vieira and T. N. Rabello

                Vol.12 n.3 1993

On an Integral Related to an Inverse Problem in Magnetocardiography
J. Baumeister and E. R. Von Stockert

A New Family of Mixed Finite Element Spaces over Rectangles
J. Douglas, Jr. and J. Wang

Active Set Methods for Problems in Column Block Angular Form

J. M. Stern and S. A. Vavasis

A Super-convergent Scheme on Irregular Grids for Systems of Two-Point
Boundary Value Problems   W. C. Connett, W. L. Golik and A. L. Schwartz

----

Contents, Linear Algebra and Its Applications
Volume 207

On the Teng Inverse Eigenvalue Problem   Khakim Ikramov & Vadim N. Chugunov

On Projections in a Space With an Indefinite Metric
Seppo Hassi and Kenneth Nordstrom

M. Omladic, M. Radjabalipour, and H. Radjavi
On Semigroups of Matrices With Traces in a Subfield

On Pairs of Projections in a Hilbert Space
W. O. Amrein and Kalyan B. Sinha

Antieigenvalues   Karl Gustafson

On the Maximal Spectral Radius of Even Tournament Matrices and the
Spectrum of Almost Skew-Symmetric Compact Operators
S. Friedland and M. Katz

On Eigenvalue Variations of Rayleigh Quotient Matrix Pencils of a
Definite Pencil   Ren-Cang Li

The Two-Sided Residue Interpolation in the Stieltjes Class for Matrix
Functions   Daniel Alpay, Joseph A. Ball, Israel Gohberg, and Leiba
Rodman

Sum Decompositions of Symmetric Matrices
J. A. Dias Da Silva, Daniel Hershkowitz, and Hans Schneider

On Skew Primeness of Inner Functions
P. A. Fuhrmann

------- end -------

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
     Table of Contents: SIAM Review
     Table of Contents, SIAM Journal on Mathematical Analysis
     Table of Contents and Author Information:
                    Advances in Computational Mathematics
     Table of Contents: Annals of Numerical Mathematics
     Table of Contents: Approximation Theory 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: 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.

    ....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)..................

Information about CATEGORIES: Use one or more of the following (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

For further information, and for examples of sample abstract form, send

a message to   ipnet-request@math.msu.edu   with the following in the
body of the message:
              send abstract-submit-info

For questions requiring human intervention, send a message to
          ipnet-owner@math.msu.edu

From: "PROF.HEINZ W. ENGL" <engl@indmath.uni-linz.ac.at>
Subject: Book Announcment
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:

        WAVELETS AND OTHER ORTHOGONAL SYSTEMS WITH APPLICATIONS

                        TABLE OF CONTENTS

1. Orthogonal Series
2. A Primer on Tempered Distributions
3. An Introduction to Orthogonal Wavelet Theory
4. Convergence and Summability of Fourier Series
5. Expansions of distributions in wavelets
6. Orthogonal Polynomials
7. Other Orthogonal Systems
8. Pointwise Convergence of Wavelet Expansions
9. A Shannon Sampling Theorem in V
10. Translation and Dilation Invariance in Orthogonal Systems
11. Analytic Representation via Orthogonal Series
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

DYNAMIC SYSTEM IDENTIFICATION AND INVERSE PROBLEMS
Papers of Second International Conference

SESSION A: INVERSE PROBLEMS, ALGORITHMS

Alifanov O.M. Regularized gradient algorithms and results of solving inverse problem for parabolic equations (in Russian)

Vabicshevich P. N. Numerical solution of problem of reconstruction of tranciant physical fields using discrete measurements (in Russian)

Naumov A.A. To regularization of the active identification system problem

Lesnic D., Elliott L., Ingham D.B. Boundary element method and minimal energy technique for the inverse heat conduction problem

Zinoviev P. A., Tairova L. P. Numerical experiments for estimating the accuracy of calculations when identifying the properties of individual layers of multilayered hybrid composites

Nikitenko N.I. The Principle of discrete combination in incorrect problems of mathematical physics

Reinhardt H. - J., Dinh Nho Hao. A sequential conjugate gradient method for the stable numerical solution to inverse heat conduction problems

Krukovskiy P.G. Universul approach to solution of IHCP

Markin A.D., Ilushenko Vi.I. Deversity schemes of increased stability in conduction inversed problems analysis

Tsirelman N.M., Eliseev I.S. Two-dimensional nonlinear IHCP

Shatalov U.S., Rikachev U.U., Lukashuk S.U., Smislov A.M. Identification of ion implantation diffusion model

Beck J.V. and Blackwell B. Function specification method with new specified functions

Nenarokomov A.V., Fadale T.D., Emery A.F. Analysis of uncertainties of a-priori known characteristics of mathematical model in parametric estimation

Mikhailov V. V. Efficient algorithm for solving one variety coefficient IHCP

Voskoboynikov Yu.F. Image identification based on incomplete tomographic data

Vasil ev V.N., Gurov I.P., Shestov A.N. Reconstruction of measuring wave phase in interferometrical system and signal identification processes

Anger G. Inverse Problems: Principles and Applications in Geophysics Technology and Medicine

SESSION B: HEAT CONDUCTION

Kozdoba L.A. Inverse Heat Transfer problems and computational thermophysics

Woodbury K.A., Thakur Sunil.K. Redundant data, future times and sensor location in the IHCP: a case study

Isaev K.B. Analysis of influence of temp of heating on conductivity of Thermal protection materials by Inverse problems

Novikov I.A. Inverse problems of material dynamic thermophysical parameters determination

Kudinov V.A., Salmanov A.N., Laptev N.I. Theoretical basis of eddy temperature field generation and heat source reconstruction

Popov V.M. Approximate analytical method of contact thermal resistance determination

Danilaev P.G., Golubev G.V. One coefficient inverse problems solution and their applications

Khokhulin V.S. The constructure thermal state one-dimensional combinatorial models

Lagun I.M. Identification of nonstationary heat transfer according to experimental data

Markin A.D., Hanna S. On a coefficient problem for Fourier's equation

Lagun I.M., Kuzmin M.P. Heat process analog simulation and identification

Kozlov V.P., Yurchuk N.I., Abdelrazaq N.A. Dual integral equations and coefficients of the identification systems in the nonstationary heat conductivity problems

Kozlov V.P., Abdelrazaq N.A. Mixed nonstationary heat conductivity problems for unbounded plate reducing to the Fredholm's integral equation

Lukyanov A.T., Bazhanov A.A., Sheryshev V.P., Piunova I.M. Determination of material thermal properties by inverse problems method

Sultangazin U.M., Matsevity Yu.M., Sheryshev V.P. On one Pseudo-inverse heat transfer problem

Chubarov D.N., Eliseev D.V., Sizov V.P. Identification of thermal contact resistance

Bogdanova M.V., Tatianin K.V., Milovskaya L.S. Approximate determination of temperature fields of partially filled cylinder

Kerov N.V., Pimenov A.A. Development of the heat flux identification algorithm based on solving multy-domain two-dimensional

Michalev A.M., Reznik S.V. Two-dimensional IHCP and research approaches for orthotrop materials parameters definition

SESSION C: CONVECTION AND HYDRODYNAMICS

Chubarov D.N., Eliseev D.V., Zuck V.I.   Determination of Heat transfer coefficients of fluid flows based on duct-wall heating parameters measurements

Kuzma-Kichta Yu. A., Komendantov A. S., Vasil eva L.T., Vaynert R.   Analysis of heating at non-uniform heating by solving two-dimensional steady-state inverse problem

Formalev V.F., Martyhina T.Y., Tukin O.A.   Identification of the mathematical model of anisotropic heat conductivity and filtration with film cooling the flying vehicle's structural elements

Kapusta P.V., Kireev V.I.   Numerical solution of the inverse problem of profiling supersonic nozzle by means of third order characteristics

Bulygin Yu.A., Valyuhov S.G., Kretinin A.V.   Individual adjustment of mixing elements and influence on flow parameters in LRE injector

Khairullin M.Kh., Shamsiev M.N.   Application of the regularization methods to the solution of the inverse coefficient problems of filtration

Faleev S.V., Samokhvalov V.V., Drozdov I.G.   About half-reverse task of heat and mass transfer in a porous wedge

Glushakov A.M., Verveyko N.D.   Identification of the model porous cooling by the method of wave approximation

Petrov J.J., Protodyakonova T.G.   The inverse problem of restoration of the unlinear coefficient of the disperse materials transport

Abaltusov V.E.   Analysis of Heat- and mass transfer in high temperature dust-gas flow

Abaltusov V.E., Gaga S.G., Zarova I.K., Pinkin V.F.   Analysis of heat- and mass transfer thermal destruction of materials in dust-gas flow

Kolesnikov P.M., Dolinkina O.P.   Inverse problems of the absorbition theory of radionuclids in the porous media

Segal A. S.   Control of thin film during its growth as inverse mass transfer problem

SESSION D: COMPLEX HEAT TRANSFER

Goryainov L.A.   The inverse heat and mass transfer problems for the determination of heat conditions of growing high-temperature monocrystals with permanent height by method of horizontal uniaxial crystallization

Permjakov P.P., Mikchailov N.E., Mandarov V.V.   Reconstruction of the heat flux on the surface of frozen soils

Dotsenko I.N., Urakayev I.M., Shatalov Yu.S.   Identification of

delay time and other parameters of solid propellants non-stationary burning in rocket engine combustion chamber

Arkhipov V.A., Bondarchook S.S., Kravets A.I. Measurement of unsteady burning rate by inverse problems method

Isakov G.N., Kuzin A.Ya. Identification of transfer processes and macrokinetics in instrumescent materials

Milovskaya L.S., Zlotnikova I.Ya. The Solution of the Inverse Diffusion Problem and the Mathematical Modelling of the Thermal Oxidation Process of the Silicon

Alekseev A.K. On the nonstationary heat flux reconstruction using irreversible changes within a material

Krukovskiy P.G., Getsov L.B., Ribnikov A.I., Kartavova E.S. Identification of Heat- and mass transfer parameters in models of High Temperature diffusion and gas-material interaction

Novak S.V., Kharchenki I.A., Khmelnitskiy V.V., Krukovskiy P.G. The solution of fire-safety problems using the methods of heat-exchange reversed problems

Dombrovsky L.A. Determination of spectral radiative properties of fiberglass thermal insulation from steady-state heat flux measurements

Glebov G.A., Galitseisky K. B. Radiation in hypersonic ionized turbulent gas jets

Prosuntsov P.V., Reznik S.V. Analysis of semi-transparent materials volumetric optical properties by inverse radiation problem

SESSION E: STRESS AND DYNAMICS

Postolnik Y.S., Orlik Y.M. Determination of the criterion of the heatbearer potential on the basis of the solution of reverse thermo-strength problem

Alexandrov D.A., Zarubin V.S. Identification of viscosity and plasticity parameters for crystal materials by simulation methods

Golovin N.N., Kuvyrkin G.N. About identifications of thermal-mechanical model of composite carbon-type material deformation

SESSION F: MATHEMATICAL PROBLEMS

Morozov V.A. The Regularization for large errors

Gol'dman N.L. Descriptive regularization algorithm for numerical solving inverse thermodestruction problem

Gilyazov S.F. Regularization of ill-posed constrained minimization problems by iteration methods

Yoskoboynikov Yu. E. Nonlinear regularized algorithm of inverse Heat Transfer Problems using pulse functions

Hinestroza D., Leung A., Murio D.A., Smith H. Cone-beam stability
analysis

Contents: SIAM Review Volume 36, Number 4, December 1994

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

Multiple Solutions for a Nonlinear Dirichlet Problem
Alfonso Castro and Jorge Cossio

Explicit Heat Kernel on Generalized Cones
Hendrik W. K. Angad-Gaur, Bernard Gaveau, and Masami Okada

Analytical and Numerical Solutions for a Class of Nonlocal
Nonlinear Parabolic Differential Equations   Yanping Lin

Monodromy Representations of Systems of Differential Equations Free
>From Accessory Parameters   Yoshishige Haraoka

Smoothing Effects for Dispersive Equations Via a Generalized Wigner
Transform   Thierry Colin

Characterization of the Smoothest Interpolant   Borislav Bojanov

----

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.

Software of accepted papers are tested and made available to the
readers. Short communications, a problems section and letters to the
Editors-in-Chief is featured in the journal at regular intervals.

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

Contents Volume 2, No. III, 1994

A parallel implementation of the restarted GMRES iterative algorithm for
nonsymmetric systems of linear equations   R. Dias da Cunha and T.
Hopkins

Time-marching numerical schemes for the electric field integral equation on a straight thin wire   P.J. Davies and D.B. Duncan

Acceleration property for the E-algorithm and an application to the summation of series   M. Prevost

Hankel operators and best Hankel approximation on the half-plane X. Li

Contents Volume 2, No. II, 1994

Numerical solution of eigenvalue problems for Hamiltonian systems M. Marletta

Continuous two-scale equations and dyadic wavelets C.K. Chui and X. Shi

Some remarks on completely vectorizing point Gauss-Seidel while using the natural ordering   C.C. Douglas

A lacunary interpolation algorithm on arbitrary points   E. Venturino

Wachspress type rational complex planar splines of degree (3,1) H.P. Dikshit, A. Ojha and R.A. Zalik

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

----

Contents:

K. Burrage, The work of John Butcher: An appreciation

Initial and Boundary Value Problems

R. Alexander, Stability and error bounds for numerical methods for stiff initial value problems

A.L. Andrew, Asymptotic correction of computed eigenvalues of differential equations

B.S. Attili, Computation of generalized turning points using collocation at Gauss points

K. Burrage and E. Platten, Runge-Kutta methods for stochastic differential equations

R.P.K. Chan, Symmetrizers for Lobatto IIIA methods

M. Crouzeix, An algebraic proof of a von Neumann Theorem

J.R. Dormand, J.P. Gilmore and P.J. Prince, Globally embedded Runge-Kutta schemes

E. Hairer, Backward analysis of numerical integrators and symplectic methods

A. Iserles, Numerical analysis of delay differential equations with variable delays

A. Iserles and S.P. Norsett, Bi-orthogonal polynomials in numerical ODEs

H. Ono and H. Toda, Explicit Runge-Kutta methods using the 2nd derivatives

B. Orel and S.P. Norsett, Symmetric pz-restricted approximants to the exponential function

R.D. Skeel, J.J. Biesiadeck, Symplectic integration with variable stepsize

M.N. Spijker, On the error commited by stopping the Newton iteration in implicit Runge-Kutta methods

R. Tirani and T. Romano, Robust defect control in continuous Runge-Kutta methods by parallel computers

J.H. Verner, Strategies for deriving new explicit Runge-Kutta pairs

Differential-Algebraic Equations

K.E. Brenan, Differential-algebraic equations issues in the direct transcription of path constrained optimal control problems

S.L. Campbell, Numerical methods for unstructured higher index DAEs

R. Marz, Progress in handling differential algebraic equations

T. Watanabe, A new numerical scheme to solve algebraic-differential equations

Delay and Partial Differential Equations

H. Brunner, The numerical solution of neutral volterra integro-differential equations with delay argument

K.J. In 't Hout, The stability of q-methods for systems of delay differential equations

S.G. Vandewalle and E.F. Van de Velde, Space-time concurrent multigrid waveform relaxation

T. Koto, Explicit Runge-Kutta schemes for evolutionary problems in partial differential equations

Design and Implementation of Algorithms

R.W. Brankin and I. Gladwell, A Fortran 90 version of RkSuite: an ODE initial value solver

J. Carroll, On the implementation of a matricial exponentially fitted scheme for the numerical solution of stiff initial-value problems

J.R. Cash and M.T. Diamantakis, On the implementation of block Runge-Kutta methods for stiff IVPs

H.W. Gerlach, Reverse communication and the ODE solver stride

T. Kouya, The comparison between the Moller and the Gill methods for explicit Runge-Kutta process

F.T. Krogh, Issues in the design of a multistep code

F. Mazzia, Boundary value methods for initial value problems: Parallel implementation

M. Murofushi and H. Nagasaka, The relationship between the roundoff errors and Mollers algorithm in the extrapolation method

Modelling

A. Holstad, Diagenetic processes in sedimentary basins - A DAE

W. Linzer, K. Ponweiser, P. Szmolyan and E.B. Weinmuller, Numerical simulation of a natural circulation steam generator

M. Scotter and A. Swift, Path-following, critical points and shape factors

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 Annals of Numerical Mathematics are to be sent to: E-mail: publish@baltzer.nl

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

Approximation Theory and its Applications, Volume 10, Nos. 1 & 2, 1994
                Contents:

Editors:

C.K. Chui   M.T. Cheng

Volume 10, No. I, 1994

Shi Xiquan, Dimensions of splines on 0-stars in R3

Xu Shusheng, A note on a strong uniqueness theorem of Strauss

Sun Xiehua, On the convergence of the modofied Szasz-Mirakjan operator

Song Wenhua, The approximation on locally convex spaces

Liu Yongping, Average o-K width of convolution function class of Lpq (R) in Lq (R)

Zhang Peixuan, On uniform approximation by partial sums of Jacobi series on elliptic region

Lu Shanzhen & Guido Weiss, Weighted weak type estimates involving spaces
Guo Shunsheng, On saturation for a spline approximation

Guo Shunsheng, On saturation for a spline approximation

Li Bingzheng, Equivalence theorem on weighted simultaneous Lp - approximation by meansof Szasz-Kantorovich operators and Baskakov-Kantorovich operators

S.A. Settu, Approximation of continuous functions by generalized Karamata means

Volume 10, No. II, 1994

F. Jeeawock-Zedek, Operator norm and error bounds for interpolating quadratic splines on a non-uniform type 2 triangulation of a rectangular domain

Wang Shiming, Approximation of spherical means of multiple Fourier integrals and Fourier series on set of full measure

Qiu Qirong, Bounds for singular integrals associated with a class of hypersurfaces

Wang Shiming, Approximation of Bochner-Riesz means of conjugate Fourier integrals below the critical index

Lai Mingjun, A serendipity family of locally supported splines

Hu Guoen, Weak type (1,1) bounds for a Marcinkiewicz integral

S.N. Dubey and A. Kumar, Approximation of functions by (N,P) operator

Li Jialiang, Pade approximants as limits of rational functions of best approximation in Orlicz space

Zhan Yinwei, A geometric feature for finite element schemes

Wu Huoxiong, Average o-widths of the unit ball

Requests for FREE SPECIMEN copies and orders for Approximation Theory and

its Applications are to be sent to: E-mail: publish@baltzer.nl

------- end -------

IPNet Digest   Volume 1, Number 11   November 7, 1994

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

            ipnet-request@math.msu.edu

with the following in the body of the message:

send filename [from category]

```
            Examples:  send smith_ab_93.2
                    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:

    send abstract-retrieve-info

-IPNet

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

            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.

Honorary Editor

M Bertero, Universita di Genova

Editorial Board

       Inverse Problems Volume 10, Number 5, October 1994

       THE US DOD: RESEARCH INTERESTS IN INVERSE PROBLEMS

Introduction
D L Colton and J R McLaughlin

Mathematics, medicine and microwaves
R A Albanese, R L Medina and J W Penn

Problems in airborne radar target recognition
B Borden

Inverse problems in ocean acoustics
M D Collins and W A Kuperman

Electromagnetic remote sensing of sea ice
A K Jordan and M E Veysoglu

PAPERS

Super-resolution in confocal scanning microscopy: V. Axial
super-resolution in the incoherent case
M Bertero, P Boccacci, F Malfanti and E R Pike

The inverse spectral problem for the generalized second-order operator
A Boumenir

A direct method for the inversion of physical systems
L F Caudill Jr, H Rabitz and A Askar

A regularization method for coefficient identification of a
non-homogeneous Helmholtz equation   J Chen, W Han and F Schulz

An inverse problem for a semilinear parabolic equation   M Choulli

Inverse scattering for anisotropic mirror image symmetric media
J Friden

A quasi-Newton method in inverse obstacle scattering
R Kress and W Rundell

An inverse boundary value problem for St Venant-Kirchoff materials
G Nakamura and Z Sun

A Laguerre expansion of the Cauchy problem for the diffusion equation
M F Pettigrew and D G Meredith

On a 2+1-dimensional Darboux system: integrable reductions
W K Schief

Stabilizing properties of maximum penalized likelihood estimation for
additive Poisson regression   S Yu, G A Latham and R S Anderssen

ERRATUM: On the inverse problem in Monte Carlo experiments H Arsham

INVERSE PROBLEMS NEWSLETTER

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

SIAM Journal on Mathematical Analysis   Vol. 26, No. 1, January 1995

CONTENTS

A Parabolic Equation of KPP Type in Higher Dimensions
Jean-Francois Mallordy and Jean-Michel Roquejoffre

Slow Motion in One-Dimensional Cahn-Morral Systems   C. P. Grant

On a System of Integrodifference Equations Modelling the
Propagation of Genes   Hwei-Ting Lin

Blow-up Solutions of Quasi-linear Degenerate Parabolic Equations
with Convection   Ryuichi Suzuki

Dynamical Behavior of Solutions of a Semilinear Heat Equation with
Nonlocal Singularity   Keng Deng

Existence and Bifurcation of Viscous Profiles for All Intermediate
Magnetohydrodynamic Shock Waves   H. Freistuhler and P. Szmolyan

Time Like Trace Regularity of the Wave Equation with a Nonsmooth
Principal Part   Gang Bao and William W. Symes

Uniform Strict Convexity of a Cost Functional for Three-Dimensional
Inverse Scattering Problem   M. V. Klibanov and Olga V. Ioussoupova

Multiplicity Results for Two Classes of Boundary-Value Problems
Philip Korman and Tiancheng Ouyang

Bananas and Banana Splits: A Parametric Degeneracy in the Hopf
Bifurcation for Maps   B. B. Peckham, C. E. Frouzakis, I. G. Kevrekidis

Trace Formulas and the Behaviour of Large Eigenvalues V. G. Papanicolaou

Necessary and Sufficient Conditions for Mean Convergence of Lagrange
Interpolation for Freud Weights   D. S. Lubinsky and D. M. Matjila

----

CONTENTS

A Posteriori Error Bounds and Global Error Control for Approximation of
Ordinary Differential Equations   Donald Estep

The Potential for Parallelism in Runge-Kutta Methods. Part 1: RK
Formulas in Standard Form   K. R. Jackson and S. P. Norsett

Accurate Discretization for Singular Perturbations: The One-Dimensional
Case   X. C. Hu, T. A. Manteuffel, S. McCormick, and T. F. Russell

Error Bounds for Fractional Step Methods for Conservation Laws with
Source Terms   Tao Tang and Zhen-Huan Teng

A Linear Algebraic Analysis of Diffusion Synthetic Acceleration for the
Boltzmann Transport Equation
S. F. Ashby, P. N. Brown, M. R. Dorr, and A. C. Hindmarsh

A Linear Algebraic Development of Diffusion Synthetic Acceleration for
Three-Dimensional Transport Equations   Peter N. Brown

Nonlinear Galerkin Method Using Chebyshev and Legendre Polynomials
I. The One-Dimensional Case   Jie Shen and Roger Temam

An Application of the Abstract Multilevel Theory to Nonconforming Finite Element Methods   Panayot S. Vassilevski and Junping Wang

On the Third and Fourth Zolotarev Problems in the Complex Plane
M.-P. Istace and J.-P. Thiran

W-methods with Automatic Partitioning by Krylov Techniques for Large Stiff Systems   Mario Buttner, Bernhard A. Schmitt, and Rudiger Weiner

A-Contractivity of Linearly Implicit Multistep Methods
Richard J. Charron and Min Hu

Numerical Stability and Efficiency of Penalty Algorithms
Jean-Pierre Dussault

Linear Algebra and Its Applications   Contents, Volume 210
Fourth Special Issue on Statistics and Linear Algebra

Perturbation Analysis of the Canonical Correlations of Matrix Pairs
Gene H. Golub and Hongyuan Zha

Restricted Canonical Correlations   Shubhabrata Das and Pranab Kumar Sen

Maximizing Bilinear Forms Subject to Linear Constraints   Steven J. Leon

Tensor Products and Statistics   J. Dauxois, Y. Romain, and S.Viguier-Pla

Assessing Quantification for the EMS Algorithm
Geoff A. Latham and Robert S. Anderssen

Pre-test Estimation in the Linear Regression Model With Competing Restrictions   Pawel R. Pordzik and Gotz Trenkler

Extending Some Results and Proofs for the Singular Linear Model
S. R. Searle

Asymptotic Behavior of Nonhomogeneous Semi-Markov Systems
A. A. Papadopoulou and P.-C. G. Vassiliou

Estimation of Parameters for Normally Distributed Random Matrices
D. Q. Wang and C. R. O. Lawoko

Generalized Noncentral Hermite and Laguerre Polynomials in Multiple Matrices   Yasuko Chikuse

Bounds for Singular Values Using Traces
Jorma Kaarlo Merikoski, Humberto Sarria, Pablo Tarazaga

When is B_A_ a Generalized Inverse of AB?   Hans Joachim Werner

Inequalities With Weights for Powers of Generalized Inverses. II
B. Mond and J. E. Pecric

Contents Volume 211
Special Issue: Generalized Inverses

Contents Volumes 212/213
Special Issue: Proceedings of the 3rd ILAS Conference

Mark Krupnik and Leiba Rodman

Algebraic Graph Theory Without Orientation
Jerrold W. Grossman, Devadatta M. Kulkarni, and Irwin E. Schochetman

Paths in Directed Graphs and Spectral Properties of Matrices
Daniel Hershkowitz

Multiplicative Maps on Matrices That Preserve the Spectrum
Scott H. Hochwald

Konig's Theorem and Bimatroids   R. B. Bapat

Existence of Matrices With Prescribed Off-Diagonal Block Element Maxima
J. A. Dias Da Silva, Daniel Hershkowitz, and Hans Schneider

Linear Transformations That Preserve the Assignment
LeRoy B. Beasley, Gwang-Yeon Lee, and Sang-Gu Lee

Diagonally Scaled Permutations and Circulant Matrices
Jeffrey L. Stuart and James R. Weaver

Inversion of a Tridiagonal Jacobi Matrix   Riaz A. Usmani

Dominant Eigenvalues Under Trace-Preserving Diagonal Perturbations
C. R. Johnson, D. P. Stanford, D. D. Olesky, and P. van den Driessche

The Theory of V-Bezoutians and Its Applications   E. M. Russakovskii

Similarity and Block Similarity   Ion Zaballa

On the Perturbation of the Least Squares Solutions in Hilbert Spaces
J. Ding and L. J. Huang

The Spherical Gap of the Graph of a Linear Transformation J.Faghih-
Habibi

On Inversion of Some Meromorphic Matrices
A. V. Pesterev and G. A. Tavrizov

Region-Dependent Optimal m-Stage Runge-Kutta Schemes for Solving a Class
of Nonsymmetric Linear Systems   Mei-Qin Chen and Chichia Chiu
------- 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
        Table of Contents: Journal of Math. Systems, Estimation, Control
        Table of Contents: Math of Control, Signals, and Systems
        Table of Contents:SIAM Journal on Mathematical Analysis

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

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

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
        Mark J. Carvlin, Bristol-Myers Squibb Co.
        Michael A. Fiddy, Univ. of Massachusetts/Lowell

Program Committee: David Isaacson, Rensselaer Polytechnic Institute
        Norman J. McCormick, Univ. of Washington
        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

Or mail four copies to: San Diego '95
                  SPIE, P.O. Box 10, Bellingham, WA 98227-0010

Your abstract should include the following:

1. Abstract Title
2. Author Listing
3. Correspondence for each author (mailing address, telephone, email)
4. Submit to: (conference title)
5. Presentation: Oral Presentation or Poster Presentation
6. Abstract Text: 250 words
7. Brief Biography (principal author only): 50-100 words

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

     Johannes Gottlieb
     Institute of Soil Mechanics and Rock Mechanics
     Karlsruhe University
     D- 76049 Karlsruhe
     phone: [49]-721-6083279
     fax: [49]-721-696096

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 - Determinetion of reticulation kinetics of an epoxy resin (ISITEM)

16 - Identification of the heat flux in the mould during injection moalding
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
diagnostis) (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.

For any further information contact:

- - Didier Delaunay, METTI coordinator : delauna @isitem.univ-nantes.fr
- - Denis Maillet, METTI secretary: dmaillet@ensem.u-nancy.fr
- - Martin Raynaud, METTI Spring School: raynaud@cethil.insa-lyon.fr
- - 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

CONTENTS

CONTENTS

- Contributed by: Edwin F. Beschler <beschler@spint.compuserve.com>

MATH OF CONTROL, SIGNALS, AND SYSTEMS
Volume 7, Number 1

CONTENTS

SIAM JOURNAL ON MATHEMATICAL ANALYSIS
March 1995   Volume 26, Number 2

CONTENTS

------- end -------