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IPNet Digest Volume 4, Number 01 January 31, 1997

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

Today's Topics:

Call for Papers: Inverse Problems in Engineering Seminar
Announcement: SIAM Journals Online
Table of Contents: Inverse Problems
Table of Contents: SIAM J. Computing
Table of Contents: SIAM J. Optimization
Table of Contents: SIAM J. Scientific Computing
Table of Contents: SIAM J. Control and Optimization
Table of Contents: SIAM J. Mathematical Analysis
Table of Contents: Advances in Computational Mathematics
Table of Contents: Numerical Algorithms
Table of Contents: Mathematics of Control, Signals, and Systems

Submissions for IPNet Digest:

Mail to ipnet-digest@math.msu.edu

Information about IPNet:

Mail to ipnet-request@math.msu.edu
<http://www.mth.msu.edu/ipnet>

From: beck@egr.msu.edu (James Beck)
Subject: Re: RPI Inverse Seminar
Date: Fri, 3 Jan 1997

Eighth Inverse Problems in Engineering Seminar
Monday, June 16 - Tuesday, June 17, 1997 and a Workshop on Selected
Topics in Inverse Problem Solving Sunday, June 15, 1997 Rensselaer
Polytechnic Institute, Troy, NY

About the Seminar

The Eighth Inverse Problems in Engineering Seminar is the continuation of the informal seminars which were initiated at Michigan State University in 1988. This seminar will be sponsored by the School of Engineering and the Department of Mechanical Engineering, Aeronautical Engineering and Mechanics at Rensselaer Polytechnic Institute.

Call for Papers

Papers are solicited from all areas involving inverse methods and their applications. Four broad categories are being used to organize sessions. These categories and possible sub-topics are:

1. Mathematical Aspects of Inverse Problems -- inverse theory and methods, uniqueness and stability considerations
2. Inverse Problems in Heat Transfer -- inverse heat conduction, inverse Stefan problem, thermal property estimation
3. Inverse Problems in Mechanics -- applications in dynamics, shape optimization, contact problems, control of fluid flow
4. Other Inverse Problems -- bio-engineering inverse problems,

inverse scattering and tomography, etc.

Presentations will be informal twenty minute talks. In addition, there will be forty minute invited talks by:

Professor James V. Beck, Department of Mechanical Engineering, Michigan State University

Professor David Isaacson, Department of Mathematical Sciences, Rensselaer Polytechnic Institute

Professor Joyce McLaughlin, Ford Foundation Professor of Mathematics, Department of Mathematical Sciences, Rensselaer Polytechnic Institute

Professor Daniel Tortorelli, Departments of Mechanical and Industrial Engineering and Theoretical and Applied Mechanics, University of Illinois at Champaign-Urbana.

If the number of submissions warrants additional program time, a poster session will be included.

About the Workshop

A workshop on selected topics in inverse problem solving is being planned in conjunction with this year's seminar. Tentative topics of coverage include mathematical aspects and relationships between different types of inverse problems, use of genetic algorithms in solving inverse problems, and dynamic programming techniques applied to inverse problems. Everyone registered for the seminar are welcome to attend the workshop. The workshop will provide general overviews in a tutorial format. The workshop will be on Sunday, June 15th, in the afternoon.

How to Register or Submit a Paper

The seminar fee is \$65. This fee includes access to the seminar and workshop, lunches both days of the seminar, a barbecue on Monday evening, and a copy of the proceedings. If you are interested in registering for this conference, please contact the chair to receive registration material. If you would like to submit a paper, please submit a tentative title and an abstract by March 1, 1997. Send titles and abstracts or other inquiries to:

Chair: Prof. Antoinette Maniatty Clare Boothe Luce Assistant Professor of Mechanical Engineering and Mechanics Department of Mechanical Engineering, Aeronautical Engineering & Mechanics Rensselaer Polytechnic Institute 110 8th Street Troy, NY 12180-3590 phone: (518) 276-6984 fax: (518) 276-6025 e-mail: maniaa@rpi.edu

From: manning@siam.org
Subject: Announcing SIAM Journals Online
Date: Wed, 08 Jan 97

Subject: Announcing SIAM Journals Online
From: SIAM

Announcing SIAM Journals Online

The Society for Industrial and Applied Mathematics (SIAM) is pleased to

Unification of some deterministic and probabilistic methods for the solution of linear inverse problems via the principle of maximum entropy on the mean P Mar\`echal and A Lannes

Boundary determination of material parameters from electromagnetic boundary information S R McDowall

Wavelet analysis of potential fields F Moreau, D Gibert, M Holschneider and G Saracco

A note on logarithms in the Painlev\`e test A Pickering

Self-energy of a charged conducting droplet as an inversion problem J Wehner and H J Krappe

A solution of the inverse nodal problem Xue-Feng Yang

Why not visit the Inverse Problems home page at <http://www.iop.org/Journals/ip?>

From: spiegelman@siam.org
Subject: SICOMP 26-1 (2/97) TOC
Date: Thu, 02 Jan 97

SIAM Journal on Computing February 1997 Volume 26, Number 1
Table of Contents

The Average-Case Complexity of Determining the Majority
Laurent Alonso, Edward M. Reingold, and Ren, Schott

Amplification by Read-Once Formulas
Moshe Dubiner and Uri Zwick

Minimal Ascending and Descending Tree Automata
Maurice Nivat and Andreas Podelski

Threshold Computation and Cryptographic Security
Yenjo Han, Lane A. Hemaspaandra, and Thomas Thierauf

Disjoint Rooted Spanning Trees with Small Depths in deBruijn and Kautz Graphs Zhengyu Ge and S. Louis Hakimi

Polynomial-Time Recognition of 2-Monotonic Positive Boolean Functions Given by an Oracle
Endre Boros, Peter L. Hammer, Toshihide Ibaraki, and Kazuhiko Kawakami

Navigating in Unfamiliar Geometric Terrain
Avrim Blum, Prabhakar Raghavan, and Baruch Schieber

Finite Monoids: From Word to Circuit Evaluation
Martin Beaudry, Pierre McKenzie, Pierre Pladeau, and Denis Th,rien

Parallelism Always Helps Louis Mak

Stochastic Scheduling with Variable Profile and Precedence Constraints
Zhen Liu and Eric Sanlaville

On Bounded Queries and Approximation
Richard Chang, William I. Gasarch, and Carsten Lund

Sparse Dynamic Programming for Evolutionary-Tree Comparison
Martin Farach and Mikkel Thorup

Total Protection of Analytic-Invariant Information in Cross-Tabulated
Tables Ming-Yang Kao

On the Power of Real Turing Machines Over Binary Inputs
Felipe Cucker and Dima Grigoriev

An NC Algorithm for Minimum Cuts David R. Karger and Rajeev Motwani

Resource Bounds for Self-Stabilizing Message-Driven Protocols
Shlomi Dolev, Amos Israeli, and Shlomo Moran

From: poulson@siam.org
Subject: SIOPT 7-1 Table of Contents
Date: Wed, 08 Jan 97

SIAM Journal on Optimization February 1997 Vol 7, No 1
Table of Contents

On the Convergence of Pattern Search Algorithms
Virginia Torczon

The Barzilai and Borwein Gradient Method for the Large Scale
Unconstrained Minimization Problem Marcos Raydan

The Affine Scaling Algorithm Fails for Step size 0.999
Walter F. Mascarenhas

On the Convergence of the Mizuno-Todd-Ye Algorithm to the Analytic
Center of the Solution Set Clovis C. Gonzaga and Richard A. Tapia

On the Quadratic Convergence of the Simplified Mizuno-Todd-Ye Algorithm
for Linear Programming Clovis C. Gonzaga and Richard A. Tapia

Interior-Point Methods for the Monotone Semidefinite Linear
Complementarity Problem in Symmetric Matrices
Masakazu Kojima, Susumu Shindoh, and Shinji Hara

A Family of Polynomial Affine Scaling Algorithms for Positive
Semidefinite Linear Complementarity Problems
B. Jansen, C. Roos, and T. Terlaky

Minimization of a Large-Scale Quadratic Function Subject to a Spherical
Constraint D. C. Sorensen

Newton Methods for Large-Scale Linear Inequality-Constrained Minimization
Anders Forsgren and Walter Murray

A Global Convergence Theory for General Trust-Region-Based Algorithms
for Equality Constrained Optimization
J. E. Dennis, Jr., Mahmoud El-Alem, and Maria C. Maciel

Algorithms for Constrained and Weighted Nonlinear Least Squares

Marten Gulliksson, Inge Soderkvist, and Per-Ake Wedin

A New Merit Function for Nonlinear Complementarity Problems and a
Related Algorithm Francisco Facchinei and Joao Soares

The Orthogonality Theorem and the Strong-f-Monotonicity Condition for
Variational Inequality Algorithms
Thomas L. Magnanti and Georgia Perakis

Computable Error Bounds for Convex Inequality Systems in Reflexive
Banach Spaces Sien Deng

Implementation of a Variance Reduction-Based Lower Bound in a
Branch-and-Bound Algorithm for the Quadratic Assignment Problem
P. M. Pardalos, K. G. Ramakrishnan, M. G. C. Resende, and Y. Li

From: tschoban@siam.org
Subject: SISC 18-2 Table of Contents
Date: Wed, 22 Jan 97

SIAM Journal on Scientific Computing March 1997 Vol 18, No 2
Table of Contents

Multiresolution Schemes for the Numerical Solution of 2-D Conservation
Laws I Barna L. Bihari and Ami Harten

A Spectral Element Technique with a Local Spectral Basis
Kelly Black

A Galerkin Method for Linear PDE Systems in Circular Geometries with
Structural Acoustic Applications Ralph C. Smith

A Fast Adaptive Numerical Method for Stiff Two-Point Boundary Value
Problems June-Yub Lee and Leslie Greengard

Revenge of the Semicoarsening Frequency Decomposition Multigrid Method
J. E. Dendy, Jr.

Multilevel Solution of Cell Vertex Cauchy-Riemann Equations
A. Borzi, K.W. Morton, E. Suli, and M. Vanmaele

t-Extrapolation - Theoretical Foundation, Numerical Experiment, and
Application to Navier-Stokes Equations Klaus Bernert

Hierarchical Basis Preconditioners in Three Dimensions
Maria Elizabeth G. Ong

Preconditioning of Block Toeplitz Matrices by Sine Transforms
Fabio Di Benedetto

CIMGS: An Incomplete Orthogonal Factorization Preconditioner
Xiaoge Wang, Kyle A. Gallivan, and Randall Bramley

GPBi-CG: Generalized Product-Type Methods Based on Bi-CG for Solving
Nonsymmetric Linear Systems Shao-Liang Zhang

The Accumulation of Rounding Errors and Port Validation for Global
Atmospheric Models James M. Rosinski and David L. Williamson

Computation of Pseudospectra by Continuation S. H. Lui

Empirical Evaluation of Innovations in Interval Branch and Bound
Algorithms for Nonlinear Systems R. Baker Kearfott

Equidistribution on the Sphere Jianjun Cui and Willi Freeden

Timely Communications

Diagonal Edge Preconditioners in p-Version and Spectral Element Methods
Mario A. Casarin

Efficient Algorithms for Solving a Fourth-Order Equation with the
Spectral-Galerkin Method Petter E. Bjorstad and Bjorn Peter Tjostheim

From: thomas@siam.org

Subject: SICON 35-2 table of contents

Date: Mon, 27 Jan 97

SIAM Journal on Control and Optimization March 1997 Vol 35, No 2
Table of Contents

Centralized and Decentralized Supervisory Control of Nondeterministic
Systems Under Partial Observation Ratnesh Kumar and Mark A. Shayman

On Controllability Conception for Stochastic Systems
Agamirza E. Bashirov and Kerim R. Kerimov

Deterministic Exit Time Control Problems with Discontinuous Exit Cost
Alain-Philippe Blanc

Nonlinear Filtering Revisited: A Spectral Approach
Sergey Lototsky, Remigijus Mikulevicius, and Boris L. Rozovskii

Descriptor Systems Without Controllability at Infinity
Ralph Byers, Ton Geerts, and Volker Mehrmann

A Behavioral Approach to Delay-Differential Systems
Heide Glusing-Luerssen

Feedback Stabilization of Affine in the Control Stochastic Differential
Systems by the Control Lyapunov Function Method
Patrick Florchinger

Optimal Strategies for Bilevel Dynamic Problems
Jane J. Ye

A Predictor-Corrector Algorithm for a Class of Nonlinear Saddle Point
Problems Jie Sun, Jishan Zhu, and Gongyun Zhao

The Synthesis of Universal Feedback Pursuit Strategies in Differential
Games F. H. Clarke, Yu. S. Ledyaev, and A. I. Subbotin

Brachistochrone with Coulomb Friction Stephen C. Lipp

Boundary Exact Controllability of Interface Problems with Singularities
II: Addition of Internal Controls Serge Nicaise

Infinite-Dimensional Linear Programming Approach to Singular Stochastic

Control Michael I. Taksar

The Differentiability of the Drag with Respect to the Variations of a Lipschitz Domain in a Navier-Stokes Flow
Juan Antonio Bello, Enrique Fernandez-Cara, Jerome Lemoine, Jacques Simon

Partial Exact Controllability for Spherical Membranes
Paola Loreti and Vanda Valente

Dynamics for Controlled Navier-Stokes Systems with Distributed Controls
L. S. Hou and Y. Yan

On-line Parameter Estimation for Infinite-Dimensional Dynamical Systems
J. Baumeister, W. Scondo, M. A. Demetriou, and I. G. Rosen

From: spiegelman@siam.org
Subject: SIMA 28-2 (3/97) TOC
Date: Thu, 30 Jan 97

SIAM Journal on Mathematical Analysis March 1997 Vol 28, No 2
Table of Contents

Blowup in Reaction-Diffusion Systems with Dissipation of Mass
Michel Pierre and Didier Schmitt

Higher-Gradient Integrability of Equilibria for Certain Rank-One Convex Integrals
Michael M. Dougherty and Daniel Phillips

The Limit of the Fully Anisotropic Double-Obstacle Allen-Cahn Equation in the Nonsmooth Case
Charles M. Elliott and Reiner Schottler

The Asymptotic Behavior of the Hyperbolic Conservation Laws with Relaxation on the Quarter-Plane
Shinya Nishibata and Shih-Hsien Yu

A Nonlinear Grating Problem in Diffractive Optics
Gang Bao and Yunmei Chen

A Semilinear Dirac Equation in $H^s(\mathbb{R}^3)$ for $s > 1$
M. Escobedo and L. Vega

Implicit Time Discretization and Global Existence for a Quasi-Linear Evolution Equation with Nonconvex Energy
G. Friesecke and G. Dolzmann

Structural Stability of Morse-Smale Gradient-Like Flows under Discretization
Ming-Chia Li

Razumikhin-Type Theorems on Exponential Stability of Neutral Stochastic Functional Differential Equations
Xuerong Mao

An Extension of the Stability Index for the Traveling-Wave Solutions and Its Application for Bifurcations
Shunsaku Nii

Solution of a Finite Convolution Equation with a Hankel Kernel by Matrix Factorization
Norbert Gorenflo and Matthias Werner

Multivariate Big and Little q -Jacobi Polynomials
Jasper V. Stokman

Approximation from Shift-Invariant Spaces by Integral Operators

Junjiang Lei, Rong-Qing Jia, and E. W. Cheney

From: Baltzer Science <mailer@ns.baltzer.nl>
Subject: Advances in Computational Mathematics content list
Date: Wed, 8 Jan 1997

Advances in Computational Mathematics 6 (1996) 1
Table of Contents

Iterative methods for solving $Ax = b$, GMRES/FOM versus QMR/BiCG
Jane Cullum

Bivariate segment approximation and splines
G. Meinardus, G. Nuernberger and G. Walz

Numerical solution of Cauchy-type integral equations of index
Jose A. Cuminato

A collocation method for singularly perturbed two-point boundary value
problems with splines in tension Miljenko Marusic and Mladen Rogina

Complexity reduction of least squares problems involving special
Vandermonde matrices T. Tommasini

Interpolation regions for convex cubic curve segments
Joerg Peters

Advances in Computational Mathematics 6 (1996) 2
Table of Contents

Barycentric coordinates for convex polytopes
Joe Warren

A finite element method for interface problems in domains with smooth
boundaries and interfaces James H. Bramble and J. Thomas King

Derivative corrections for quadrature formulas
William F. Ford, Yuesheng Xu and Yunhe Zhao

A subspace preconditioning algorithm for eigenvector/eigenvalue
computation James H. Bramble, Joseph E. Pasciak and Andrew V. Knyazev

C^r -finite elements of Powell-Sabin type on the three direction mesh
M. Laghchim-Lahlou and P. Sablonniere

Announcement: Advances in Computational Mathematics
Full Text Now Electronically Available

Volume 6, No 1-2 are now available in Adobe Acrobat PDF format
on <http://www.baltzer.nl/adcom>, for researchers from subscribing
institutes only.

Please enter the details of your institute's subscription at
<http://www.baltzer.nl/register.html>

For more information contact subscribe@ns.baltzer.nl.

From: Baltzer Science <mailer@ns.baltzer.nl>
Subject: Numerical Algorithms content list
Date: Mon, 27 Jan 1997

Numerical Algorithms 13 (1996) 3-4
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On the quality of algorithms based on spline interpolation
Helmut Brass

Numerical computation of polynomial zeros by means of Aberth's method
Dario Andrea Bini

Does contraction preserve triangular meshes?
P. Ciarlet, Jr and F. Lamour

Analysis of discrete techniques for image transformation
Zi-Cai Li

A blossoming approach to accuracy of the degree elevation process
J.-C. Fiorot and P. Jeannin

On the stability of polynomial transformations between Taylor, Bernstein
and Hermite forms Thomas Hermann

On the convergence of multipoint Pade-type approximants and quadrature
formulas associated with the unit circle
A. Bultheel, P. Gonzalez-Vera, E. Hendriksen and O. Njastad

Piecewise linear interpolants to Lagrange and Hermite convex scattered
data J. M. Carnicer and M. S. Floater

A convergence theory of multilevel additive Schwarz methods on
unstructured meshes Tony F. Chan and Jun Zou

Book Reviews C. Brezinski

More information on this journal: <http://www.baltzer.nl/numa/>

Announcement: Online Availability

Volume 13 is now available in Adobe Acrobat PDF format on
<http://www.baltzer.nl>, for
researchers from subscribing institutes only.

Please enter the details of your institute's subscription at
<http://www.baltzer.nl/register.html>

For more information contact subscribe@ns.baltzer.nl. Comments are
welcome.

From: Secretary Support - Magrijn <magrijn.secsup@tip.nl>
Subject: Table of contents MCSS Volume 9, number 3 1996
Date: Fri, 10 Jan 1997

Mathematics of Control, Signals, and Systems 1996 Vol 9, No 3
Table of Contents

Flow regularity and optimality conditions with control in L_p
A. Margheri

Least squares integration of one-dimensional codistributions with
application to approximate feedback linearization
A. Banaszuk, S. Swiech, and J. Hauser

Solving the infinite-dimensional discrete-time algebraic Riccati
equation using the extended symplectic pencil
J. Oostveen and H. Zwart

The complementary-slackness class of hybrid systems
A.J. van der Schaft and J.M. Schumacher

INFORMATION

Information on MCSS including tables of contents is available at its home
pages:

<http://www.cwi.nl/cwi/departments/BS3/mcss.html>

<http://www.math.rutgers.edu/~sontag/mcss.html>

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----- end -----

IPNet Digest Volume 4, Number 02 February 28, 1997

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

Today's Topics:

Symposium: Algorithms for Control, Signals, Image Processing
Conference: Scale-Space Theory in Computer Vision
Announcement: Conference List on Medical Imaging, Vision
Announcement: New Deadline, SIAM Conf. Applied Linear Algebra
Table of Contents: SIAM Review
Table of Contents: SIAM J. Applied Mathematics
Table of Contents: Approximation Theory and Applications
Table of Contents: Advances in Computational Mathematics

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<http://www.mth.msu.edu/ipnet>

From: Sharon Henderson <insmath@cc.UManitoba.CA>
Subject: IIMS June 1997 Conferences and Registration Form
Date: Fri, 14 Feb 1997

INTERNATIONAL LINEAR ALGEBRA SOCIETY (ILAS) SYMPOSIUM ON
"Fast Algorithms for Control, Signals and Image Processing"
June 6th, 7th and 8th, 1997

and

ILAS/IIMS
Session on Linear Algebra for the Canadian Mathematical Society
June 9th, 1997

Organized by

Institute of Industrial Mathematical Sciences (IIMS)
University of Manitoba

Participating Institutions of IIMS are: Manitoba Hydro, Atomic Energy of Canada Ltd., Faneuil ISG Inc. and Red River Community College.

The objective of the three day meeting is to bring together people from the areas of Control Theory, Signal and Image Processing and Computational Linear Algebra to discuss recent advances, trends and future directions for research on fast algorithms. This will offer a unique opportunity for interaction among these groups and will provide a forum of interdisciplinary communication that should encourage researchers to develop a new sense of participation and a new perception of these areas as closely related scientific disciplines.

The Symposium will feature a special emphasis on modern methods in scientific computing and linear algebra relevant to digital control, signal and image processing. For such applications it is important to consider ingredients such as 1) sophisticated mathematical models of the

problems, including a priori knowledge, 2) rigorous mathematical theories to understand the difficulties of solving problems which are often ill-posed, and 3) fast algorithms for either real-time or data-massive computations. Aspects of each of these three ingredients will be discussed by speakers in the Symposium by way of short courses, invited and contributed lectures, and invited and contributed mini-symposiums on relevant topics.

On June 6 a set of tutorial short courses will be given.

The Summer Meeting of the Canadian Mathematical Society (CMS) is being held in Winnipeg on June 7, 8, 9, 1997 and hence overlaps with the ILAS Workshop on June 7 and 8. A CMS Session on Linear Algebra organized by ILAS/IIMS will be held on June 9, 1997.

The Winnipeg Symposium and short courses are the first of their kind for ILAS.

On June 6 there will be an ILAS Workshop which will be open to participants of the CMS meeting.

| Date | ILAS | CMS |
|-----------|------------------------|--|
| June 6 | Tutorial Short Courses | |
| June 7, 8 | Symposium | Annual Meeting |
| June 9 | | ILAS/IIMS Session on Linear Algebra* |

*The main speakers are Roger Horn (Utah) and Paul Van Dooren (University Catholique de Louvain).

The Registration Fee is \$150.00. An additional \$60.00 will enable ILAS participants to attend the CMS Summer Meeting. The CMS program will be available later on the IIMS Web page.

Sponsors

Institute of Mathematics and its Applications (IMA), The Fields Institute, Centre de Recherches Mathematiques (CRM), Manitoba High Voltage Direct Current Research Center, University of Manitoba.

Invited Speakers

Eleanor Chu (Guelph), Martin Hanke (Germany), Simon Haykin (McMaster), Linda Kaufman (Bell Labs), Christopher Paige (McGill), Haesun Park (Minnesota), Ali Sayed (UCSB), G. W. Stewart (Maryland).

Short Courses

Stephen Boyd (Stanford), Raymond Chan (Chinese University of Hong Kong), Tom Kailath (Stanford), Byron Welsh (Air Force Institute of Technology).

Invited Mini-Symposia

Nancy Nichols (Reading), Biswa Datta (NIU), Georg Heinig (Kuwait), James Nagy (SMU), Paul Van Dooren (Universite Catholique de Louvain), Franklin Luk (RPI)

Program Committee

Co-Chairs: Dianne O'Leary (Maryland), Bob Plemmons (Wake Forest)
Members: Moody Chu (NCSU), Biswa Datta (NIU), Brent Ellerbroek (Air Force Phillips Lab), Georg Heinig (Kuwait), Franklin Luk (RPI), Haesun Park (Minnesota), Ali Sayed (UCSB), P. N. Shivakumar (Manitoba), Paul Van Dooren (University Catholique de Louvain)

Organizing Committee

Chair: P. N. Shivakumar, Director, IIMS (Manitoba)
Members: Tom Kailath (Stanford), Peter Lancaster (Calgary), Dianne O'Leary (Maryland), Bob Plemmons (Wake Forest), Hans Schneider (Wisconsin)

Local Organizing Committee

Chair: P. N. Shivakumar, IIMS, Members: S. Kocabiyik (Applied Mathematics), Q. Ye (Applied Mathematics), W. Hoskins (Applied Mathematics), W. Pedrycz (Electrical Engineering).

Call for Papers

Contributed papers for the ILAS Symposium and for the CMS Special Session on Linear Algebra are solicited. Please send author, title and abstracts before March 31, 1997.

Communications

All enquiries regarding the meeting, including those on contributed papers, should be addressed to:

P. N. Shivakumar, Director.

Registration forms should be sent to:

Mrs. S. Henderson, Conference Coordinator.

Address for both is as follows:

Institute of Industrial Mathematical Sciences
420 Machray Hall
University of Manitoba
Winnipeg, Manitoba R3T 2N2
Canada
Tel: (204) 474 6724 Fax: (204) 275 0019
E-Mail: inmath@cc.umanitoba.ca
URL: <http://www.iims.umanitoba.ca>

[This digest item has edited for length. Please contact the organizers for more information, including a registration form. -Ed.]

From: "Bart M. ter Haar Romeny" <Bart.terHaarRomeny@cv.ruu.nl>
Subject: Papers at Scale-Space'97 conference 2-4 July Utrecht
Date: Sat, 8 Feb 1997

SCALE-SPACE '97:

First International Conference on Scale-Space Theory in Computer Vision
2-4 July 1997, Utrecht University, Utrecht, the Netherlands

URL: <http://www.cv.ruu.nl/Conferences/ScaleSpace97.html>
Info: scalespace97@cv.ruu.nl

Conference Board

Bart M. ter Haar Romeny (chair)
Luc M.J. Florack
Jan J. Koenderink
Max A. Viergever

The following papers have been accepted as a full paper (oral presentation at the conference, 12 pages in the proceedings):

Jacob D. Furst, R.S. Keller, J.E. Miller, S.M. Pizer
Images loci are ridges in geometric spaces

Ron Kimmel, N. Sochen, R. Malladi
From high energy physics to low level vision

Olivier Coulon, I. Bloch, V. Frouin, J-F Mangin
Multiscale measures in linear scale-space for characterizing cerebral functional activations in 3D PET difference images

Jon Sporring, J.A. Weickert
On generalized entropies and scale-space

Mads Nielsen, W.Niessen, R. Maas, L. Florack, B. ter Haar Romeny
On the duality of scalar and density flows

Alfons Salden, B. ter Haar Romeny, M. Viergever
Dynamic scale-space theories

Sadegh Abbasi, F. Mokhtarian, J. Kittler
Reliable classification of chrysanthemum leaves through curvature scale space

Ilya Pollak
Scale space analysis by stabilized inverse diffusion equations

C. Lorenz, I.-C. Carlsen, T.M. Buzug, C. Fassnacht, J. Weese
A multi-scale line filter with automatic scale selection based on the Hessian matrix for medical image segmentation

Simon R. Arridge, A. Simmons
Multi-spectral probabilistic diffusion using Bayesian classification

Lars Bretzner, T. Lindeberg
On the handling of spatial and temporal scales in feature tracking

Tony Lindeberg
Linear spatio-temporal scale-space

Ron Kimmel
Intrinsic scale space for images on surfaces: The geodesic curvature flow

Satoru Morita
Generating stable structure using scale-space analysis with non-uniform Gaussian kernels

Farzin Mokhtarian
Multi-scale contour segmentation

Ole Fogh Olsen, M. Nielsen
Generic events for the gradient squared with application to multi-scale segmentation

Stiliyan N. Kalitzin, B.M. ter Haar Romeny, M.A. Viergever
Invertible orientation bundles on 2D scalar images

Olivier Faugeras, R. Keriven
Level set methods and the stereo problem

Marta Fidrich
Following feature lines across scale

Joachim Weickert
Recursive separable schemes for nonlinear diffusion filters

Freek J. Beekman, E.T.P. Sijpen, W.J. Niessen
Supervised diffusion parameter selection for processing SPECT brain images

The following papers have been accepted as a poster (poster presentation at the conference, 4 pages in the proceedings):

Kathrin Berkner
Reconstruction of self-similar functions from scale-space

Hidekata Hontani, K. Deguchi
Multi-scale detection of characteristic figure structures using principal curvatures of image gray-level profile

Peter Bajcsy, N. Ahuja
A new framework for hierarchical segmentation using homogeneity analysis

Michael Black, G. Sapiro, D. Marimont, D. Heeger
Robust Anisotropic diffusion

Bruce Fischl, E.L. Schwartz
Fast adaptive alternatives to nonlinear diffusion in image enhancement: Greens function approximators and nonlocal filters

Tony Lindeberg
On automatic selection of temporal scales in time-causal scale-space

Peter Forte, D. Greenhill
A scalespace approach to shape similarity

Julia A. Schnabel, S.R. Arridge
Multi-scale active shape description

Richard Harvey, J.A. Bangham, A. Bosson
Some morphological scale-space filters and their properties

Karl Krissian, G. Malandain, N. Ayache
Directional anisotropic diffusion applied to segmentation of
vessels in 3D images

Stijn Oomes, P. Snoeren, Tj. Dijkstra
3D shape representation: transforming polygons into voxels

J.A. Garcia, J. Fdez-Valdivia, J. Martinez-Baena
Scale selection using three different representations for images

A. Imiya, R. Katsuta
Extraction of structure feature from three-dimensional object
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Jozef Kacur, Karol Mikula
Slowed anisotropic diffusion

Nasser Armande, P. Montesinos, O. Monga
Thin nets extraction using a multi-scale approach

INFO and registration:

Scale-Space '97 Secretariat
Heidelberglaan 100 - E.01.334
3584 CX Utrecht - the Netherlands
Tel. +31-30-2507772
Fax +31-30-2513399
Email: scalespace97@cv.ruu.nl
URL: <http://www.cv.ruu.nl/Conferences/ScaleSpace97.html>

From: "Bart M. ter Haar Romeny" <Bart.terHaarRomeny@cv.ruu.nl>
Subject: Utrecht Conference List on Medical Imaging and Computer Vision
Date: Sat, 22 Feb 1997

Announcement:

The Utrecht Conference List on Medical Imaging and Computer Vision is the most complete and up-to-date list to keep track of the world of conference announcements in computer vision and (medical) image processing.

The list layout has been renewed, with fast access to dozens of conferences, with a quick reference guide for deadline overview.

Plaese add the URL to your bookmarks:

<http://www.cv.ruu.nl/Conferences/>

The list is maintained by the Image Sciences Institute of Utrecht University, the Netherlands.

Best wishes,
Bart ter Haar Romeny

Bart M. ter Haar Romeny Ph.D.
Bart.terHaarRomeny@cv.ruu.nl
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URL: http://www.cv.ruu.nl

From: flores@siam.org
Subject: '97 SIAM Conference on Applied Linear Algebra
Date: Wed, 19 Feb 97

Sixth SIAM Conference on Applied Linear Algebra
October 29-November 1, 1997
Snowbird Ski and Summer Resort
Snowbird, Utah

Deadline for submission of minisymposium proposals EXTENDED TO:
APRIL 1, 1997.

Deadline for submission of contributed abstracts: APRIL 1, 1997.

The minisymposium proposal form and LaTeX macros for submitting
abstracts can be accessed electronically through the conference Web
homepage at

<http://www.siam.org/conf.htm>

For more information about plenary speakers and their topics of
presentations, or how to submit minisymposium proposals and contributed
papers, visit

<http://www.siam.org/meetings/la97/la97home.htm>

or contact SIAM. Telephone: 215-382-9800 Fax: 215-386-7999
E-mail: meetings@siam.org

From: jean-bart@siam.org
Date: Thu, 20 Feb 97

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Fourier Integral Operators (J. J. Duistermaat), Michael E. Taylor

Wavelets: An Analysis Tool (M. Holschneider), David Walnut

SELECTED COLLECTIONS

LATER EDITIONS

CHRONICLE

From: thomas@siam.org

Subject: SIAP 57-2 table of contents

Date: Thu, 20 Feb 97

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From: Baltzer Science <mailer@ns.baltzer.nl>
Subject: Approximation Theory and its Applications content list
Date: Tue, 11 Feb 1997

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Samir A. Ashour

A Counterexample on Monotone Muentz Approximation
S.P. Zhou

More information on this journal:
<http://www.baltzer.nl/apptheo/>

From: Baltzer Science <mailer@ns.baltzer.nl>
Subject: Advances in Computational Mathematics content list
Date: Fri, 14 Feb 1997

Advances in Computational Mathematics 1996 Volume 6, Numbers 3-4

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E. H. Twizell

Foreword: JOHN CRANK
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JOHN CRANK: his association with Brunel University
J. C. Newby

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The role of the Crank-Gupta model in the theory of free and moving boundary problems

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P. J. van der Houwen and J. J. B. de Swart

Waveform relaxation methods for implicit differential equations
P. J. van der Houwen and W. A. van der Veen

More information on this journal:

<http://www.baltzer.nl/adcom/>
----- end -----

IPNet Digest Volume 4, Number 03 March 31, 1997

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

Today's Topics:

Research Summary: Inverse Problems & Complex Processes Analysis
Announcement: Freeware for Inverse Thermal Conductivity Problem
Report: IMA Workshop on Computational Radiology and Imaging
Research Query: Regularity for the Norton Hoff Equation
Table of Contents: Inverse Problems
Table of Contents: SIAM J. Matrix Analysis and Applications
Table of Contents: SIAM J. Numerical Analysis
Table of Contents: SIAM J. Control and Optimization
Table of Contents: J. Math. Systems, Estimation, and Control

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<http://www.mth.msu.edu/ipnet>

From: Romanovski <pointltd@glasnet.ru>
Subject: Inverse Problems Technique for Complex Processes Analysis
Date: Fri, 14 Mar 1997

Subject: Inverse Problems Technique for the Complex Processes Analysis

Dear colleagues!

I carried out some investigation on inverse problems.

There are 4 parts of this research:

1. Uniqueness of inverse problems solution
2. Identification errors and experimental design for inverse problems
3. Numerical aspects of inverse problems solution (stability and optimal regularization)
4. Processes analysis with unknown adequate mathematical models

I should like to describe the main purpose and results of this investigation.

The goal of part 1 is a substantiation of informatibilities increasing for experimental data processing.

Questions, which give attention:

- 1.1. How much information can be extracted from experimental observations?
- 1.2. Which uniqueness violations are possible at inverse problems solution?
- 1.3. Whether there can exist experiments that not enabling to identify unknowns at any observation volume and beforehand given measurements accuracy?
- 1.4. Which experiments and observations conditions guarantee simultaneous identification of several unknown model parameters and functions?
- 1.5. Are possible simultaneous identification of a heat transfer coefficient and an ambient temperature from temperature measurements inside solid?

Other parts will be describe at the following digests.

For everybody who are interested in receiving the answers on these questions please contact with me via e-mail. I should like to send the summary and papers.

Best regards
Mikhail Romanovski
pointltd@glas.apc.org

From: "Aleksey K. Alekseev" <Aleksey@aleks.msk.ru>
Subject: Direct and Inverse Thermal Conductivity Problem - Freeware
Date: Thu, 27 Mar 97

Dear Sirs!

We have freeware program HeatCad v. 2.01. It is nonsteady spatially two-dimensional finite difference solver coupled with optimization codes and assigned for direct and inverse thermal conductivity problems. You can obtain it by e-mail request (Aleksey@aleks.msk.ru)

Sincerely yours
A. Alekseev

From: IPNet
Subject: IMA Workshop on Computational Radiology, Imaging
Date: Wed, 26 Mar 1997

Report on the Winter 1997 IMA Workshop
on
Computational Radiology and Imaging:
Therapy and Diagnosis
at the
Institute for Mathematics and Its Applications
University of Minnesota
March 17-21, 1997

Organizers:
Christoph Borgers (Tufts University) and Frank Natterer (Univ. of Muenster, Germany)

The IMA workshop on "Computational Radiology and Imaging: Therapy and Diagnosis" brought together mathematicians, engineers, computer scientists, and medical physicists, in order to further communication on a wide-range of important subjects.

The following appeared in the workshop announcement:

Radiation is used in medicine for both diagnostics (for instance, tomography) and therapy (for instance, radiation treatment of cancer). These applications lead to hard computational and mathematical problems. From a mathematical point of view, many of these are related to differential or integro-differential equations. As an example, Boltzmann transport equations underlie the modeling of optical tomography and radiotherapy planning. Typically, inverse problems are the ones of ultimate interest, but even the forward problems are often quite difficult computationally.

The workshop brings together Applied Mathematicians, Numerical Analysts, Nuclear Engineers, and Medical Physicists working on different aspects of these and related problems, including subjects such as X-ray tomography and magnetic resonance imaging. One of the main purposes of the workshop is to improve communication between different groups of researchers working on different aspects of the same problems, sometimes without even knowing about each others' existence. There will therefore be a substantial number of expository talks aimed at non-specialists.

The following talks were on the workshop schedule:

Scattered Radiation in Emission Computed Tomography: Accurate Modeling and Optimum Utilization Harrison H. Barrett, University of Arizona

Image reconstruction in optical tomography
S.R. Arridge, University College London

The application of the x-ray transform to 3D conformal radiotherapy with dynamic multileaf collimators Robert Y. Levine, MIT

Some Computational Issues in Medical Imaging
Gabor Herman, University of Pennsylvania

Tomography through the Transport Equation
D.S. Anikonov, Acad. Sci. Vladivostok, Russia

Bioelectric Field Imaging Problems: Modeling, Computation, and Visualization Christopher R. Johnson, University of Utah

Nonlinear Inverse Problems and Emission Tomography
Peter Maass, Univ. of Potsdam, Germany

New Inverse Problems and Applications of Old Ones
Lawrence Shepp, Rutgers Univ. and AT&T Bell Labs

Inverse Radiation Treatment Planning -- Theoretical and Implementational Issues
Weldon A. Lodwick, Univ. of Colorado at Denver

A novel approach to numerical methods in diffuse and acoustical imaging Michael V. Klibanov, Univ. North Carolina at Charlotte

Mathematical Problems in Microwave Medical Imaging
David L. Colton, Univ. of Delaware

Vector Field Tomography Gunnar Sparr, Institute of Technology Lund

Some Recent Results in Cone-Beam Tomography
Rolf Clack, University of Utah

Wavelets and Localised Tomography
David F. Walnut, George Mason University

3-D Visualization, Smoothing and Segmentation of Tomogram Data and Applications to Surgery Willi Jaeger, University of Heidelberg

Electrical Impedance Imaging
David Isaacson, Rensselaer Polytechnic Institute

On the Fully Discretized Model for the Inverse Problem in Radiation
Therapy Treatment Planning Yair Censor, University of Haifa

From: Nicolas Gomez <Nicolas.Gomez@sophia.inria.fr>
Subject: About Norton Hoff
Date: Tue, 25 Mar 1997

I am working at INRIA (Sophia Antipolis) with J.P. Zolesio on Norton Hoff equation. Do you know some regularity results about the solution?

Thanks a lot,
Nicolas Gomez

Centre de Mathematiques Appliquees (Ecole des Mines de Paris)
I.N.R.I.A
2004 Rte Lucioles, 06560 Sophia Antipolis, Fr tel(33)0493657947
Nicolas.Gomez@sophia.inria.fr 04 93 65 79 47

From: Janet Thomas <janet.thomas@iopublishing.co.uk>
Subject: Inverse Problems contents list
Date: Mon, 24 Mar 1997

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predictor-corrector regularization methods P K Lamm

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Projected Landweber method and preconditioning
M Piana and M Bertero

Application of the projected Landweber method to the estimation of the
source time function in seismology
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Shape retrieval of an obstacle immersed in shallow water from single
frequency farfields using a complete family method
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Explicit method for inverse wave scattering in solids
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Electrical impedance tomography with basis constraints
M Vauhkonen, J P Kaipio, E Somersalo and P A Karjalainen

A distributed source method for inverse acoustic scattering
T S Angell, Xinming Jiang and R E Kleinman

INVERSE PROBLEMS NEWSLETTER

For further information on Inverse Problems, and all Institute of
Physics Publishing journals and electronic products see
<http://www.iop.org>

From: schad@siam.org
Subject: SIMAX 18-2 TOC
Date: Tue, 04 Mar 97

SIAM J. Matrix Analysis and Applications April 1997, Vol. 18, No. 2
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Efficient Solution of Linearly Coupled Lyapunov Equations
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Some Improvement of Oppenheim's Inequality for M-Matrices

Jianzhou Liu and Li Zhu

Homotopy Method for the Large, Sparse, Real Nonsymmetric Eigenvalue Problem S. H. Lui, H. B. Keller, and T. W. C. Kwok

Norms and Inequalities Related to Schur Products of Rectangular Matrices Wenchao Huang, Chi-Kwong Li, and Hans Schneider

Matrix Analysis of a Two-Stage-Splitting Iteration for Maximum Penalized Likelihood Estimation S. Yu, G. A. Latham, and R. S. Anderssen

Convergence of Polynomially Bounded Semigroups of Matrices Leonid Gurvits and Leiba Rodman

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Optimal Backward Perturbation Bounds for Underdetermined Systems Ji-guang Sun and Zheng Sun

A Fast Parallel Cholesky Decomposition Algorithm for Tridiagonal Symmetric Matrices Ilan Bar-On, Bruno Codenotti, and Mauro Leoncini

A Stabilized QMR Version of Block BICG V. Simoncini

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On the Complexity of Matrix Balancing B. Kalantari, L. Khachiyan, and A. Shokoufandeh

Circulant Preconditioners for Markov-Modulated Poisson Processes and Their Applications to Manufacturing Systems Wai Ki Ching, Raymond H. Chan, and Xun Yu Zhou

Quasi Lumpability, Lower-Bounding Coupling Matrices, and Nearly Completely Decomposable Markov Chains Tugrul Dayar and William J. Stewart

Probabilistic Analysis of Gaussian Elimination without Pivoting Man-Chung Yeung and Tony F. Chan

Erratum: Comments on Normal Toeplitz Matrices by Farenick et al. Khakim D. Ikramov

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From: tschoban@siam.org
Subject: SINUM 34-2 Table of Contents
Date: Wed, 05 Mar 97

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A Note on the Superlinear Convergence of GMRES
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Rolf Stenberg and Manil Suri

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Lu Han and Larry L. Schumaker

Cubature Rules of Prescribed Merit
J. N. Lyness and I. H. Sloan

A Domain Decomposition Method for the Acoustic Wave Equation with Discontinuous Coefficients and Grid Change
Alain Bamberger, Roland Glowinski, and Quang Huy Tran

Analysis of Some Quadrilateral Nonconforming Elements for Incompressible Elasticity Zhimin Zhang

Three-Dimensional Finite Element Methods for the Stokes Problem
Daniele Boffi

A New Theoretical Approach to Absorbing Layers
Patrick Joly and Jukka Tuomela

Schwarz Methods: To Symmetrize or Not to Symmetrize
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Analysis of the Spatial Error for a Class of Finite Difference Methods for Viscous Incompressible Flow Brian R. Wetton

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Characteristic Galerkin Schemes for Scalar Conservation Laws in Two and Three Space Dimensions Peixiong Lin, K. W. Morton, and E. Suli

Solving Polynomial Systems Using a Branch and Prune Approach
Pascal Van Hentenryck, David McAllester, and Deepak Kapur

Mixed Finite Elements for Elliptic Problems with Tensor Coefficients as Cell-Centered Finite Differences
Todd Arbogast, Mary F. Wheeler, and Ivan Yotov

Erratum: Quadrature Error Bounds with Applications to Lattice Rules
Fred J. Hickernell

From: thomas@siam.org
Subject: SICON 35-3 table of contents
Date: Thu, 20 Mar 97

SIAM J. Control and Optimization May 1997 Vol. 35, No. 3
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Weighted Sensitivity Minimization for Causal, Linear, Discrete
Time-Varying Systems Michel Verhaegen

Output-Induced Subspaces, Invariant Directions, and Interpolation in
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Optimal Control for Holonomic and Nonholonomic Mechanical Systems with
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Wang-Sang Koon and Jerrold E. Marsden

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H. J. C. Huijberts, C. H. Moog, and R. Andiarti

Finite-Dimensional Filters. Part I: The Wei-Norman Technique
M. Cohen de Lara

Finite-Dimensional Filters. Part II: Invariance Group Techniques
M. Cohen de Lara

Optimization of Observations: A Stochastic Control Approach
Boris M. Miller and Wolfgang J. Runggaldier

State Maps for Linear Systems
Paolo Rapisarda and J. C. Willems

From: hyman@birkhauser.com (Elizabeth Hyman)
Subject: JMSEC TOC
Date: Tue, 11 Mar 1997

Submitted by Edwin Beschler

Globally Convergent Homotopy Algorithms for the Combined $H_2/H(\infty)$
Model Reduction Problem

Yuzhen Ge, Layne T. Watson, Emmanuel G. Collins, Jr., Dennis S. Bernstein

Numerical Recovery of Material Parameters in Euler-Bernoulli Beam Models

Ralph C. Smith, Kenneth L. Bowers, and Curtis R. Vogel

A Parametrization of the Minimal Square Spectral Factors of a
Nonrational Spectral Density Augusto Ferrante

Summary: A Sliding Horizon Feedback Control Problem with Feedforward and
Disturbance William N. Patten and Luther W. White

Summary: Estimates of the Rate of Convergence for Distributed Parameter
Identification in Linear Parabolic Problems Tommi Karkkainen

Summary: Control Lyapunov Functions, Input-to-State Stability and
Applications to Global Feedback Stabilization for Composite Systems

J. Tsinias

Summary: Frequency Domain Criteria for Hurwitz Stability of Generalized
Disc Polynomials C.B. Soh

Elizabeth Hyman

Journal Production Editor

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----- end -----

IPNet Digest Volume 4, Number 04 April 30, 1997

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

Today's Topics:

International Symposium: Inverse Problems in Engineering Mech.
Workshop: Industrial Mathematics Modeling for Grad. Students
Research Summary: Inverse Problems & Complex Proc. Analysis II
Table of Contents: SIAM J. Mathematical Analysis
Table of Contents: SIAM J. Optimization
Table of Contents: SIAM J. Applied Mathematics
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Table of Contents: Numerical Algorithms

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From: dtanaka@gipwc.shinshu-u.ac.jp (Masa. Tanaka)
Subject: ISIP98
Date: Wed, 30 Apr 1997

International Symposium on
Inverse Problems in Engineering Mechanics 1998 (ISIP'98)
March 24 to 27, 1998, Nagano City / Japan

Organized by
Shinshu University (Japan)

Co-Organized by
The Pennsylvania State University (USA)
and
Ecole Polytechnique (France)

Sponsored by
Ministry of Education, Science, Sports and Culture, Japan
Co-Sponsored by
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Prof. M. Yamamoto, University of Tokyo (Japan)

OBJECTIVES

Inverse Problems can be found in many topics of engineering mechanics. Following the first IUTAM Symposium held in Tokyo, in May 1992 and the second one in Paris, in November 1994, we think it should be very fruitful to gather researchers and engineers again for exchange of the newest ideas and discussion on recent developments in these areas. The following general areas will be the subject of presentations and

discussions: mathematical and computational aspects of the inverse problems, parameter or system identification, shape determination, sensitivity analysis, optimization, material property characterization, ultrasonic nondestructive testing, elastodynamic inverse problems, thermal inverse problems, and other engineering applications.

SYMPOSIUM LOCATION

Nagano City is located at the center of Japan's main island, Honshu, and 90 minutes by bullet train from Tokyo. Nagano is surrounded by beautiful high mountains. The next Winter Olympic Games will be held in this city in February of 1998 (<http://www.nagano.olympic.org/index.html>).

CALL FOR PAPERS

Papers are invited on the topics related to a wide area of inverse problems in engineering mechanics. Contributors are requested to submit extended abstracts of no more than 2000 words in English to the Symposium Secretariat either by E-mail or by air mail (3 copies). All accepted papers will be published in the proceedings after the Symposium.

DEADLINES

Extended abstract (2000 words): September 1, 1997

Acceptance notification: November 15, 1997

Final Manuscript (camera-ready): March 24, 1998

Note that during the symposium only a soft-cover volume of extended abstracts will be available. The symposium book of selected papers will be published by a well-known publisher after the symposium.

SYMPOSIUM SECRETARIAT

Mr. Kim Sato

JASCOME Office

c/o Kozo Keikaku Engineering Inc.

24F Shinjuku Dai-ichi Seimei Bldg.

2-7-1 Nishi-Shinjuku, Shinjuku-ku, Tokyo 163-07, Japan

TEL: +81-3-3348-0644, FAX: +81-3-3346-1274

E-mail: sato@kke.co.jp

Information on this symposium will be announced through the Internet (URL <http://homer.shinshu-u.ac.jp/ISIP98>). Those who are interested in this symposium are kindly requested to contact the secretariat via E-mail. Scientific queries should be sent to the Chair or the Co-Chair of the Symposium.

Prof. Masa. Tanaka, Chair

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E-mail: ft7@psu.edu

From: "Dr. Hien T. Tran" <tran@eos.ncsu.edu>
Subject: Industrial Math Modeling Workshop for Graduate Students
Date: Mon, 21 Apr 1997

1997 Industrial Mathematics Modeling Workshop for
Graduate Students

August 4-12, 1997

Center for Research in Scientific Computation
North Carolina State University

OBJECTIVES:

- * to expose 30 graduate students in mathematics and statistics to the challenging and exciting real-world problems from industry and government laboratories
- * to introduce students to the team approach to problem solving

FORMAT:

In the Workshop the students will be divided into six teams to work on "industrial mathematics" problems brought on by experienced applied mathematicians. These problems are not academic exercises found in classrooms, but rather challenging, real-world problems from industry or applied science and require fresh, new insight for their formulation and solution. In last year Workshop, the problems were presented by scientists and researchers from Aerospace Corporation, Armstrong Lab. at Brooks AFB, Chemical Industry Institute of Toxicology, Hughes Aircraft Company, Lord Corporation and National Security Agency. The problem presenters for this year Workshop are being recruited and their names will be announced subsequently.

ORGANIZERS:

Fernando Reitich, North Carolina State University
Jeffrey Scroggs, North Carolina State University
Hien Tran, North Carolina State University

APPLICATION PROCEDURE:

Graduate students in mathematics, applied mathematics, numerical analysis, statistics or operations research can be nominated for this program by a faculty member by sending a letter of recommendation. In addition, the student is required to send in a copy of a recent transcript. The deadline for application is June 30, 1997. The Workshop will cover all local living expenses and will provide partial support for travel to all U.S. citizens and permanent residents (subject to funding availability). Funding for this Workshop has been requested with the National Security Agency and the National Science Foundation.

Submit your complete applications or any inquiries you may have concerning this Workshop to:

Hien T. Tran
Center for Research in Scientific Computation
Box 8205
North Carolina State University
Raleigh, NC 27695-8205

Telephone: (919) 515-8782
Fax: (919) 515-1636
e-mail: tran@control.math.ncsu.edu
Web-address: <http://www2.ncsu.edu/immworkshop/announce.html>

From: Romanovski <pointltd@glasnet.ru>
Subject: Inverse Problems Technique for the Complex Processes Analysis
Date: Sun, 20 Apr 1997

Dear colleagues!

At the previous IPNet Digest Vol.4, No.3 it was described the first part of inverse problems investigation which deals with "Uniqueness of inverse problems solution". Here is second part: "Identification errors and experimental design for inverse problems". I should like to describe the main purpose and results of this part. Other parts 3 and 4 will be describe at the following digests.

Researches, conducted in first part, show an opportunity of a significant increase of experiment informatibility. In particular it was shown that all unknown parameters of object can to determine based on only of one experiment.

The execution of experiment, granting limited volume of observations sample, requires the answer to a question on organization of appropriate conditions of observation and purpose of optimum design of measurements. In this connection the main goal of second part of investigation is a method development for analysis of identification errors and finding the best points in the observation's space from the standpoint of identification errors minimum.

Questions, which give attention:

- 2.1. How to find identification errors dependence on the position of observations for any kind of mathematical models?
- 2.2. Which experiment and measurement conditions guarantee a minimum level of identification errors?
- 2.3. How the optimum observations plan depends from the type of unknowns and functional properties of a model state? In particular, are possible to get general design in case of nonlinear dependence of input-output functions?
- 2.4. What is the optimum observations plan for solid heat properties determination? In particular, is there enough only one internal observation to find heat properties?

It is shown that the regularization method is highly effective for solving the observational design problem in real object described by broad class of mathematical models, polynomial, ODE, PDE. Based on this method, we have proposed an approach by which to analyze comprehensively the properties of an experiment.

We have use this approach to find optimal measurement point, determine the guaranteed identification error, to investigate the sensitivity and identifiability of the model, and to establish the main factors for achieving a manageable identification error.

For everybody who are interested in receiving the answers on these questions please contact with me via e-mail. I should like to send the

summary and papers.

Best regards
Mikhail Romanovski
pointltd@glas.apc.org

From: poulson@siam.org
Subject: SIMA 28-3 Table of Contents
Date: Fri, 04 Apr 97

SIAM Journal on Mathematical Analysis May 1997 Vol. 28, No. 3
Table of Contents

Gas Dynamics System: Two Special Cases
Francois Bereux, Eric Bonnetier, and Philippe G. LeFloch

The Cauchy Problem and the Continuous Limit for the Multilayer Model in
Geophysical Fluid Dynamics T. Colin

Higher Gradient Integrability of Minimizers for a Polyconvex Case in Two
Dimensions Michael M. Dougherty

Stability of Gaseous Stars in Spherically Symmetric Motions
Song-Sun Lin

Long-Time Behavior for a Convection-Diffusion Equation in Higher
Dimensions Miguel Escobedo and Enrique Zuazua

Stability and Lyapunov Functions for Reaction-Diffusion Systems
W. B. Fitzgibbon, S. L. Hollis, and J. J. Morgan

An Inverse Problem for the Hydraulic Properties of Porous Media
Paul DuChateau

On Concentration of Positive Bound States of Nonlinear Schroedinger
Equations with Competing Potential Functions
Xuefeng Wang and Bin Zeng

Error Bounds in Nonsmooth Image Deblurring Alfred S. Carasso

Exponential Asymptotics in a Singular Limit for n-Level Scattering
Systems Alain Joye

A Classical Theorem on the Singularities of Legendre Series in C^3 and
Associated System of Hyperbolic Partial Differential Equations
Peter A. McCoy

On Trigonometric Series Expansions of Twelve Jacobian Elliptic Functions
D. S. Tselnik

Smooth Refinable Functions Provide Good Approximation Orders
Amos Ron

Analytic Functions Optimizing Competing Constraints
J. William Helton and Andrei E. Vityaev

From: wunderlich@siam.org
Subject: SIOPT 7-2 Table of Contents

Date: Tue, 08 Apr 97

SIAM Journal on Optimization May 1997 Volume 7, Number 2,
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On the Self-Concordance of the Universal Barrier Function
Osman Guler

A Quadratically Convergent Infeasible-Interior-Point Algorithm for LCP
with Polynomial Complexity Rongqin Sheng and Florian A. Potra

A Large-Step Infeasible-Interior-Point Method for the P_* -Matrix LCP
Florian A. Potra and Rongqin Sheng

Efficiency of the Analytic Center Cutting Plane Method for Convex
Minimization Krzysztof C. Kiwiel

Penalty/Barrier Multiplier Methods for Convex Programming Problems
Aharon Ben-Tal and Michael Zibulevsky

Practical Aspects of the Moreau-Yosida Regularization: Theoretical
Preliminaries Claude Lemarechal and Claudia Sagastizabal

An Infeasible Path-Following Method for Monotone Complementarity
Problems Paul Tseng

Smooth Approximations to Nonlinear Complementarity Problems
Bintong Chen and Patrick T. Harker

Convergence Rates in Forward-Backward Splitting
George H-G. Chen and R. T. Rockafellar

Convergence of Newton's Method for Singular Smooth and Nonsmooth
Equations Using Adaptive Outer Inverses
Xiaojun Chen, Zuhair Nashed, and Liqun Qi

Newton and Quasi-Newton Methods for a Class of Nonsmooth Equations and
Related Problems Defeng Sun and Jiye Han

Exact Penalization and Necessary Optimality Conditions for Generalized
Bilevel Programming Problems J. J. Ye, D. L. Zhu, and Q. J. Zhu

On Uniqueness of Lagrange Multipliers in Optimization Problems Subject
to Cone Constraints Alexander Shapiro

Hadamard and Strong Well-Posedness for Convex Programs
Julian P. Revalski

A Projection-Based Algorithm for Consistent and Inconsistent Constraints
Tuvia Kotzer, Nir Cohen, and Joseph Shamir

Single Machine Scheduling to Minimize Batch Delivery and Job Earliness
Penalties
T. C. Edwin Cheng, Mikhail Y. Kovalyov, and Bertrand M.-T. Lin

A Network Design Problem for a Distribution System with Uncertain Demands
Franco Blanchini, Franca Rinaldi, and Walter Ukovich

-Deidre Wunderlich, SIOPT Editorial Associate

From: thomas@siam.org
Subject: Contents, SIAM Journal on Applied Mathematics
Date: Thu, 10 Apr 97

SIAM Journal on Applied Mathematics June 1997 Vol. 57, No. 3
Table of Contents

Asymptotic Analysis of the Transient Conjugate Heat Transfer Process
Between Two Forced Counterflowing Streams
C. Trevino, A. Espinoza, and F. Mendez

A Capillary Network Model for Gas Migration in Low-Permeability Media
M. D. Impey, P. Grindrod, H. Takase, and K. J. Worgan

Qualitative Properties of Steady-State Poisson-Nernst-Planck Systems:
Mathematical Study J.-H. Park and J. W. Jerome

Qualitative Properties of Steady-State Poisson-Nernst-Planck Systems:
Perturbation and Simulation Study
V. Barcion, D.-P. Chen, R. S. Eisenberg, and J. W. Jerome

Spraying the Perfect Billet I. A. Frigaard and O. Scherzer

A System of Reaction Diffusion Equations Arising in the Theory of
Reinforced Random Walks Howard A. Levine and Brian D. Sleeman

Rate of Convergence for Derivative Estimation of Discrete-Time Markov
Chains via Finite-Difference Approximation with Common Random Numbers
Liyi Dai

Limiting Exit Location Distributions in the Stochastic Exit Problem
Robert S. Maier and Daniel L. Stein

Integral Representations and Asymptotics for Infinite- and
Finite-Capacity Queues Described by the Unfinished Work I
Xiaoqian Tan and Charles Knessl

Integral Representations and Asymptotics for Infinite- and
Finite-Capacity Queues Described by the Unfinished Work II
Xiaoqian Tan and Charles Knessl

-Kelly Thomas, Production Editor, SIAM Journal on Applied Mathematics

From: sisson@siam.org
Subject: Contents, SIAM Journal on Scientific Computing
Date: Mon, 14 Apr 97

SIAM Journal on Scientific Computing May 1997 Vol. 18, No. 3
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An Accurate and Robust Flux Splitting Scheme for Shock and Contact
Discontinuities Yasuhiro Wada and Meng-Sing Liou

A Stable Penalty Method for the Compressible Navier-Stokes Equations:
II. One-Dimensional Domain Decomposition Schemes
J. S. Hesthaven

Parallel Algorithms for Adaptive Mesh Refinement

Numerical approximation of homoclinic chaos
Uri M. Beyn and Don Kleinkauf

Long periodic shadowing
Brian A. Coomes, Huseyin Kocak and Kenneth J. Palmer

Lyapunov-type numbers and torus breakdown: numerical aspects and a case study
Luca Dieci and Jens Lorenz

Successive continuation for locating connecting orbits
Luca Doedel, Jens Friedman and Kenneth J. Kunin

Two-dimensional invariant manifolds and global bifurcations: some approximation and visualization studies
Mark E. Johnson, Michael S. Jolly and Ioannis G. Kevrekidis

Nonautonomous systems, cocycle attractors and variable time-step discretization
Peter E. Kloeden and Bjoern Schmalfuss

Libration point trajectory design
Martin W. Lo

On the stability of the spectral Galerkin approximation
Andrei A. Lyashenko

Convergent families of inertial manifolds for convergent approximations
James C. Robinson

Inertial manifolds and linear multi-step methods
Tony Shardlow

Numerical bifurcation and stability analysis for steady-states of reaction diffusion equations
Tony Smiley

Probabilistic and deterministic convergence proofs for software for initial value problems
Tony Stuart

Homoclinic connections and numerical integration
Alexander Tovbis
----- end -----

IPNet Digest Volume 4, Number 05 May 31, 1997

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

Today's Topics:

Tutorial: Solving ill-conditioned and singular linear systems
Research Summary: Inverse Problems & Complex Proc. Analysis III
Workshop: Computational and Applied Mathematics II
Meeting: SIAM 45th Anniversary & Annual Meeting
Tutorial: Multiscale Image Analysis
Table of Contents: Inverse Problems
Table of Contents: SIAM Review
Table of Contents: SIAM J. Numerical Analysis
Table of Contents: SIAM J. Control and Optimization
Table of Contents: Computational and Applied Mathematics
Table of Contents: Advances in Computational Mathematics
Table of Contents: Numerical Algorithms
Table of Contents: Mathematics of Control, Signals, and Systems

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

Information about IPNet:
Mail to ipnet-request@math.msu.edu
<http://www.mth.msu.edu/ipnet>

From: Arnold Neumaier <neum@cma.univie.ac.at>
Date: Wed, 07 May 1997 18:23:08 +0200

Solving ill-conditioned and singular linear systems

Have you ever needed to solve an ill-conditioned linear system,
but found no satisfactory textbook answers?

Have you ever wanted to understand regularization techniques,
but were put off by the functional analytic or stochastic background
needed for digesting the relevant literature?

Have you ever tried to teach about regularization in a numerical
analysis course but couldn't do it for lack of a quickly accessible
approach to the subject?

The following survey paper might give you the information you need
with a minimal amount of technicalities.

* - * - *

Arnold Neumaier,
Solving ill-conditioned and singular linear systems:
A tutorial on regularization

It is shown that the basic regularization procedures for finding
meaningful approximate solutions of ill-conditioned or singular linear
systems can be phrased in terms of simple linear algebra that can be
taught in any numerical analysis course. Apart from rewriting many known
results in a simpler form, we also derive a new two-parameter family of

merit functions for the determination of the regularization parameter. The traditional merit functions from generalized cross validation (GCV) and generalized maximum likelihood (GML) are recovered as special cases.

The paper can be retrieved from the WWW site

<http://solon.cma.univie.ac.at/~neum/papers.html#reg>

* - * - *

Titles of some other recent papers available:

- * Book review of ``Janos D. Pinter, Global Optimization in Action''
- * Global optimization by multilevel coordinate search
- * On satisfying second-order optimality conditions using modified Cholesky factorizations
- * Parameter estimation and confidence regions for multivariate autoregressive and Ornstein-Uhlenbeck processes
- * Scaling and structural condition numbers

From: pointltd@glasnet.ru
Subject: About IP investigation
Date: Mon, 19 May 1997 20:35:58 +0400 (WSU DST)

Subject: INVERSE PROBLEMS TECHNIQUE FOR THE COMPLEX PROCESSES ANALYSIS
Date: 05.19.97

Dear colleagues!

Here is the third part of investigation, which deals with inverse problems applications for the complex processes analysis. It devotes to "Numerical Aspects of Stability and Optimal Regularization of Inverse Problems". At the previous IPNet Digest Vol.4, No.3, No.4 it was described the part 1 (uniqueness) and part 2 (experimental design). I should like to describe the main purpose and results of third part.

Having shown, that inverse problems statement can to increase a number of simultaneously determined unknowns (part 1), as well as that for their finding significant decrease of observation volume is allowed (part 2), it is required to give a method for unknown object properties determination based on measurements, which are made at single experiment. The main purpose of a part 3 is practical recommendations development for ill-posed problems regularization. They must to give satisfactory identification accuracy of several unknown functions for a wide class of mathematical model when observations have final (not zero) level of measurements noise.

Questions, which give attention.

1. How to avoid difficulties of determination of optimum regularization parameter or its some weight factors analogues, when anybody concentrated on the least squares formulation and standard Tikhonov regularization has not been very helpful?

2. What factors provide satisfactory accuracy of the IP solution in case, when observations have a not improvement measurements errors?
Including, is regularization research sufficient for the practical tasks,
when measurements errors are asymptotically decrease?
3. Is it possible to get satisfactory accuracy of the solution, when the coordination with a level of measurements errors is achieved, but restriction of admissible solution area is not executed sufficient, and on the contrary, sufficient restriction of admissible solution area is made, but coordination with a errors level of measurements is executed only in whole sampling?
4. Which requirements to regularization methods need to be presented for achievement solution with minimum identification error? In particular, how to choose regularization functional and which there should be norms
of the coordination with observations?

Decision of these questions has allowed to develop the regularization scheme,

which can be used for a wide class of inverse problems. It permits:

- - to avoid difficulties of regularization parameter determination;
- - to make the proximity of the observed and model-calculated states to within
the measurement noise level separately on each point of observation;
- - to execute any required restriction of admissible solution area;
- - to use such regularization for restoration of initial and boundary conditions, identification of linear and nonlinear parameters of differential equations, finding source functions and etc.

For everybody who are interested in receiving the answers on these questions

please contact with me via e-mail. I should like to send the summary and papers.

Best regards
Mikhail Romanovski
pointltd@glas.apc.org

From: victor@ca.wai.com (Victor Pereyra)
Subject: II PWACM
Date: Wed, 30 Apr 1997

Second Pan American Workshop in Computational and Applied Mathematics.
Gramado, Brazil, September 8-12, 1997

This five-day Workshop will cover selected areas of computational and applied mathematics. It is a sequel to the one that was held in Caracas, Venezuela in January 1993. The areas of concentration in this Workshop will again be chosen among those of substantial interest to the nations of this hemisphere. One of the main purposes is to help establish further contacts among computational and applied mathematicians in the hemisphere, with the goal of solving problems of significant economic and environmental importance to the region.

There is a growing interest in this subject in the Americas, and an increase in the use of mathematical and computer modeling to help in the

solution of societal problems, such as the effects of deforestation, pollution control and oil exploration and recovery. The declining cost of computing and the increasing availability of computer networks is beginning to make such modeling available, even in developing countries.

At this time, it is estimated that there are approximately 600 applied and computational mathematicians in Latin America. In addition, there is a large number of engineers and scientists with strong interest in the subject. The organizers are expecting a total attendance of 600 people, with at least 500 from Latin American countries. This event will coincide with the annual convention of the Brazilian Society of Applied and Computational Mathematics.

For timely information on this conference on the Web, see:

<http://math.unm.edu/ACA/PanAm.html>

We are seeking funds from NSF, which supported the first Workshop, and have a commitment from SIAM for help in promotional and other aspects. There will be Proceedings published by Birkhauser-Verlag as a special issue of *Matemática Aplicada e Computacional*, the Brazilian Journal of Applied and Computational Mathematics.

Victor Pereyra, Chairman, Program Committee
Weidlinger Associates, Los Altos, CA, USA

From: flores@siam.org
Subject: SIAM 45th Anniversary & Annual Meeting...
Date: Thu, 15 May 97 08:36:57 EST

SIAM 45th Anniversary and Annual Meeting
Stanford University, July 14-18, 1997

Please make note of the following deadlines for hotels and dormitory reservations:

- June 11, 1997 - Stanford Terrace Inn
Telephone: 415-857-0333
- June 11, 1997 - Holiday Inn Palo Alto
Telephone: 415-328-2800
- June 15, 1997 - Hyatt Rikeys
Telephone: 415-493-8000
- June 30, 1997 - Stanford University Governor's Complex (Dorms)
Contact SIAM, Telephone: 215-382-9800
meetings@siam.org
- June 30, 1997 - Deadline for Advance Registrations
Contact SIAM, Telephone: 215-382-9800
meetings@siam.org

For more information about the meeting, dormitory, hotels, transportation, and registration, and to obtain the fill-in forms to make a reservation or registration, visit the World Wide Web at:

<http://www.siam.org/meetings/an97/an97home.htm>.

See you in Stanford!

The Meeting Organizers

From: "Bart M. ter Haar Romeny" <Bart.terHaarRomeny@cv.ruu.nl>
Subject: Tutorial Multiscale Image Analysis
Date: Fri, 16 May 1997 16:00:16 +0200 (MDT)

Announcement:

At the upcoming conference "Scale-Space'97", 2-4 July 1997 at Utrecht University, a tutorial on

"Multiscale Image Analysis and Front-End Vision:
Introduction to Scale-Space Theory"

will be given on July 1, 1997, in reaction to multiple requests.

NB: This is the afternoon BEFORE the conference Scale-Space'97.
Attendance is free for registrants of the conference.

Lecturer: Bart M. ter Haar Romeny, PhD, Utrecht University
Date: Tuesday July 1, 1997
Place: University Hospital Utrecht, Room C5
Time: 14:00 - 17:00

Topics:

Notion of scale in physics and mathematics
Physics of observation, apertures
Axiomatic derivation of some aperture kernels
Differentiation, ill-/well-posedness and scale
History of scale-space theory development
Images as regular distributions
The human visual pathway, receptive field (RF) structure
Retinal distribution of RF's, feedback in the visual system
Gaussian derivatives and the diffusion equation
Some differential geometry on images in 2D, 3D, 2D-time
Geometric invariants, tensors
Applications in medical imaging
Multiscale optic flow
Nonlinear, geometry-driven diffusion schemes
Divergence forms
Variational (energy minimization) schemes
Curve evolution
Diffusion tensor diffusion
Summary

URL's:

Scale-Space'97: <http://www.cv.ruu.nl/Conferences/ScaleSpace97.html>
Tutorial: <http://www.cv.ruu.nl/Conferences/Tutorial.html>
(incl. lecture notes)

Registration for the conference: See the Web page, or send an email at scalespace97@cv.ruu.nl to receive the registration forms.

Bart M. ter Haar Romeny Ph.D. E-mail:
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Image Sciences Institute Tel: +31-30-2508197 / 2507772
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Heidelberglaan 100, 3584 CX Utrecht, ftp: ftp.cv.ruu.nl

The Netherlands

URL: <http://www.cv.ruu.nl>

From: Janet Thomas <janet.thomas@iopublishing.co.uk>

Subject: Contents list for Inverse Problems

Date: Fri, 16 May 1997 14:08:37 +0100

Inverse Problems Vol. 13, Issue 3, June 1997 Pages: L7-L10, 555-886

LETTER TO THE EDITOR

Solving the Kadomtsev--Petviashvili equation with initial data not vanishing at large distances

M Boiti, F Pempinelli and A Pogrebkov

THE US DOD: RESEARCH INTERESTS IN INVERSE PROBLEMS

Guest Editors' introduction

J R McLaughlin and W W Symes

Discrimination of buried targets via the singularity expansion

C E Baum

Some issues in inverse synthetic aperture radar image reconstruction

B Borden

Scattering and inverse scattering of sound-hard obstacles via shape deformation

D N Ghosh Roy, L Couchman and J Warner

PAPERS

Regularization of a two-dimensional two-phase inverse Stefan problem

D D Ang, A Pham Ngoc Dinh and D N Thanh

Microwave imaging of time-varying radar targets

J Bertrand and P Bertrand

Inverse scattering via skin effect

Y Chen

Generalized Radon transform inversions for reflectivity in anisotropic elastic media

M V de Hoop and N Bleistein

Transient external 3D excitation of a dispersive and anisotropic slab

J Frid\`en and G Kristensson

Discretization and regularization of an inverse problem related to a quasilinear hyperbolic integrodifferential equation

J Janno

Some Newton-type methods for the regularization of nonlinear ill-posed problems

B Kaltenbacher

Bi-Hamiltonian formalism and the Darboux--Crum method: I. From the KP to the mKP hierarchy

F Magri and J P Zubelli

Uniqueness and numerical recovery of a potential on the real line

J L Mueller and T S Shores

The inverse problem in optics of stratified media with discontinuous parameters

K V Popov and A V Tikhonravov

Putting Constraints in Optimization for First Year Calculus Students
Kelly Black

Some Eigenvalue Properties of Persymmetric Matrices
Russell M. Reid

Problems and Solutions

Book Reviews

Selected Topics in Approximation and Computation (Marek A. Kowalski,
Krzysztof A. Sikorski, and Frank Stenger), Borislav Bojanov

An Introduction to Symbolic Dynamics and Coding (Douglas Lind and Brian
Marcus), Mike Boyle

An Introduction to Linear and Nonlinear Scattering Theory (G. F. Roach),
David L. Coulton

Introduction to Disjunctive Kriging and Non-Linear Geostatistics
(J. Rivoirard), Noel Cressie

Multivariate Geostatistics (Hans Wackernagel), Victor De Oliveira and
Benjamin Kedem

Analysis of Algorithms---Computational Methods and Mathematical Tools
(Micha Hofri), Philippe Flajolet

The CRC Handbook of Combinatorial Designs (Charles J. Colbourn and
Jeffrey H. Dinitz), Katherine Heinrich

The Hilbert Transform of Schwartz Distributions and Applications
(J. N. Pandey), Philip Heywood

Qualitative Estimates for Partial Differential Equations: An
Introduction (James N. Flavin and Salvatore Rionero),
Cornelius O. Horgan

Parallel and Sequential Methods for Ordinary Differential Equations
(Kevin Burrage), Ken Jackson

Handbook of Exact Solutions for Ordinary Differential Equations
(A. D. Polyanin and V. F. Zaitsev), Murray S. Klamkin

Exact Controllability and Stabilization: The Multiplier Method
(V. Komornik), John E. Lagnese

Group Theory and Physics (S. Sternberg), Ivailo M. Mladenov

Elliptic Marching Methods for Domain Decomposition (Patrick J. Roache),
Diego A. Murio

Special Functions: An Introduction to the Classical Functions of
Mathematical Physics (Nico M. Temme), Frank W. J. Olver

Stable Non-Gaussian Random Processes (Gennady Samorodnitsky and Murad
S. Taqqu), Magda Peligrad

Nonlinear Waves in Elastic Media (A. Kulikovskii and E. Sveshmikova),

Michael Renardy

Numerical Methods for Differential Equations: A Computational Approach
(John R. Dormand), Lawrence F. Shampine

Integral Equations: Theory and Numerical Treatment (Wolfgang
Hackbusch), Ian H. Sloan

Handbook on Splines for the User (Eugene V. Shikin and Alexander
I. Plis), Helmut Spath

Time Dependent Problems and Difference Methods (Bertil Gustafsson,
Heinz-Otto Kreiss, and Joseph Oliger), Endre Suli

Applied Continuum Mechanics (T. J. Chung), Peter Wolfe

Conservative Finite-Difference Methods on General Grids (Mikhail
Shashkov), Zhimin Zhang

Selected Collections

Later Editions

Chronicle

From: Deborah Poulson, Production Editor SIAM Review

From: sisson@siam.org

Subject: Contents, SIAM Journal on Numerical Analysis

Date: Mon, 05 May 97 09:28:44 EST

SIAM Journal on Numerical Analysis June 1997 Volume 34, Number 3
Table of Contents

Computation of Singularities in Large Nonlinear Systems
W. Govaerts

Stability and Convergence of a Finite Element Method for Reactive
Transport in Ground Water Zhangxin Chen and Richard E. Ewing

Scattered Data Interpolation Using C2 Supersplines of Degree Six
Ming-Jun Lai and Larry L. Schumaker

Subdivision Direction Selection in Interval Methods for Global
Optimization T. Csendes and D. Ratz

Preconditioning Chebyshev Spectral Collocation by Finite-Difference
Operators Sang Dong Kim and Seymour V. Parter

Optimal L1-Rate of Convergence for the Viscosity Method and Monotone
Scheme to Piecewise Constant Solutions with Shocks
Zhen-Huan Teng and Pingwen Zhang

Mesh Smoothing Using A Posteriori Error Estimates
Randolph E. Bank and R. Kent Smith

A Convergence Analysis of an h-Version Finite-Element Method with
High-Order Elements for Two-Dimensional Elasto-Plasticity Problems
Yiwei Li and Ivo Babuska

A Finite-Element Method for Laplace- and Helmholtz-Type Boundary Value

Problems with Singularities Xiaonan Wu and Houde Han

A Sequential Regularization Method for Time-Dependent Incompressible
Navier-Stokes Equations Ping Lin

Analysis of the Inexact Uzawa Algorithm for Saddle Point Problems
James H. Bramble, Joseph E. Pasciak, and Apostol T. Vassilev

A Penalized Finite-Element Method for a Compressible Stokes System
R. Bruce Kellogg and Biyue Liu

Analysis of Moving Mesh Partial Differential Equations with Spatial
Smoothing Weizhang Huang and Robert D. Russell

Analysis of the Cell-Vertex Finite Volume Method for Hyperbolic Problems
with Variable Coefficients Philippe Balland and Endre Suli

An L1-Error Bound for a Semi-Implicit Difference Scheme Applied to a
Stiff System of Conservation Laws
Hans Joachim Schroll, Aslak Tveito, and Ragnar Winther

Best Error Bounds for Odd and Even Degree Deficient Splines
Francois Dubeau and Jean Savoie

An ADI Method for Hysteretic Reaction-Diffusion Systems
Chichia Chiu and Noel Walkington

The Numerical Computation of Homoclinic Orbits for Maps
W.-J. Beyn and J.-M. Kleinkauf

Error Estimates with Sharp Constants for a Fading Memory Volterra
Problem in Linear Solid Viscoelasticity
S. Shaw, M. K. Warby, and J. R. Whiteman

The Application of Eigenpair Stability to Block Diagonalization
Nilotpal Ghosh, William W. Hager, and Purandar Sarmah

Defining Functions for Multiple Hopf Bifurcations
W. Govaerts, J. Guckenheimer, and A. Khibnik

From: Edward Sisson, Production Editor

From: thomas@siam.org
Subject: Contents, SIAM Journal of Control and Optimization
Date: Mon, 19 May 97

SIAM Journal of Control and Optimization July 1997 Vol. 35, No. 4
Table of Contents

Min-Max Characterization of a Small Noise Limit on Risk-Sensitive Control
A. Bensoussan and H. Nagai

Finite-Dimensional Filters with Nonlinear Drift VII: Mitter Conjecture
and Structure of η Jie Chen and Stephen S.-T. Yau

Finite-Dimensional Filters with Nonlinear Drift VIII: Classification of
Finite-Dimensional Estimation Algebras of Maximal Rank with State-Space
Dimension 4 Jie Chen, Stephen S.-T. Yau, and Chi-Wah Leung

Proximal Minimization Methods with Generalized Bregman Functions
Krzysztof C. Kiwiel

Turnpike Property of Optimal Solutions of Infinite-Horizon Variational Problems
A. J. Zaslavski

An Abstract Bang-Bang Principle and Time-Optimal Boundary Control of the Heat Equation
Victor J. Mizel and Thomas I. Seidman

H-Infinity Control and Estimation Problems with Delayed Measurements: State-Space Solutions
Krishan M. Nagpal and R. Ravi

Constrained H-Infinity Optimal Control over an Infinite Horizon
Athanasios Sideris and Hector Rotstein

Experimental Confirmation of a PDE-Based Approach to Design of Feedback Controls
H. T. Banks, Ralph C. Smith, D. E. Brown, R. J. Silcox, and Vern L. Metcalf

Pontryagin's Principle for State-Constrained Boundary Control Problems of Semilinear Parabolic Equations
Eduardo Casas

An Approximation Algorithm for Nonholonomic Systems
Wensheng Liu

Regularity Properties of the Phase for Multivariable Systems
Kevin A. Grasse and Jonathan R. Bar-on

A General Stochastic Outer Approximations Method
Y. V. Volkov and S. K. Zavriev

A Remark on Existence of Solutions of Infinite-Dimensional Noncompact Optimal Control Problems
H. O. Fattorini

Sequential Convex Subdifferential Calculus and Sequential Lagrange Multipliers
Lionel Thibault

From: Kelly Thomas, Production Editor, SIAM Journal on Control and Optimization

From: demoura@server02.lncc.br (Carlos Moura)
Subject: Comp & Appl Math: Sp. Issue Stochastic Analysis I - contents
Date: Tue, 13 May 1997 12:28:27 -0300

Computational and Applied Mathematics Vol.16, Issue 1, 1997
(Matematica Aplicada e Computacional)
Table of Contents

Jointly published by Birkhauser-Boston and SBMAC - Brazilian Soc. for Computational and Applied Mathematics

Special Issue on Stochastic Analysis I

Foreword
MD Fragoso and OLV Costa (Guest Editors)

The Unfolding of Dynamics in Stochastic Analysis

L Arnold

The Feynman-Kac Formula and Decomposition of Brownian Paths
M Jeanblanc, J Pitman and M Yor

Feller Semigroups and Markov Processes
K Taira

From: Baltzer Science <mailer@ns.baltzer.nl>
Subject: Advances in Computational Mathematics content list
Date: Tue, 20 May 1997 09:32:04 +0200
Message-Id: <199705200732.JAA28577@ns.baltzer.nl>

Advances in Computational Mathematics 1997 Volume 7, Number 3
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The Petrov--Galerkin method for second kind integral equations II:
multiwavelet scheme
Zhongying Chen, Charles A. Micchelli and Yuesheng Xu

Adaptive finite element for semi-linear convection--diffusion problems
L. Pouly and J. Pousin

Error analysis of mixed finite elements for cylindrical shells
Geng Yang, Michel C. Delfour and Michel Fortin

The compass (star) identity for vector-valued rational interpolants
P.R. Graves-Morris and B. Beckermann

Sensitivity analysis of the differential matrix Riccati equation based
on the associated linear differential system
Mihail Konstantinov and Vera Angelova

A new theoretically motivated higher order upwind scheme on
unstructured grids of simplices Monika Wiers

Interior estimates for a low order finite element method for the
Reissner--Mindlin plate model Douglas N. Arnold and Xiaobo Liu

Stepsize selection for tolerance proportionality in explicit
Runge--Kutta odes
M. Calvo, D.J. Higham, J.I. Montijano and L. Rández

Spectral properties of matrix continuous refinement operators
Qingtang Jiang and S.L. Lee

Orthogonality properties of linear combinations of orthogonal
polynomials II
Francisco Marcellan, Franz Peherstorfer and Robert Steinbauer

More information on this journal:

<http://www.baltzer.nl/adcom/>

Sincerely,
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From: Baltzer Science <mailer@ns.baltzer.nl>

Subject: Numerical Algorithms content list
Date: Tue, 20 May 1997 09:37:51 +0200

Numerical Algorithms 1997 Volume 14, Number 4
 Table of Contents

Immersed interface methods for moving interface problems
Zhilin Li

A class of two-stage iterative methods for systems of weakly nonlinear
equations Zhong-Zhi Bai

Rectangular matrix Pade approximants and square matrix orthogonal
polynomials Andre Draux and Borhane Moalla

Progressive stable interpolation
Abdelmalek Nigro and Pierre-Jean Laurent

Massively parallel preconditioners for symmetric positive definite
linear systems Francois Alouges and Philippe Loreaux

Stable evaluation of box-splines Leif Kobbelt

Construction of conjugate quadrature filters with specified zeros
Wayne Lawton and Charles A. Micchelli

Book reviews

More information on this journal:

<http://www.baltzer.nl/numa/>

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mailer@ns.baltzer.nl

From: Secretary Support - Magrijn <magrijn.secsup@tip.nl>
Subject: Journal MCSS
Date: Tue, 27 May 1997 15:37:28 +-200

MCSS Volume 9, Number 4
Table of Contents

Connections between stochastic control and dynamic games
P. Dai Pra, L. Meneghini and W.J. Runggaldier

How violent are fast controls? -II
T.I. Seidman and Jiongmin Yong

Finite-dimensional solutions of a modified Zakai-equation
V.E. Benes and R.J. Elliott

On the scalar rational interpolation problem
P. Fitzpatrick

Finite-dimensional filters with nonlinear drift VI: Linear structure on
 Ω Jie Chen and S.S.-T. Yau

Complexity issues in robust stability of linear delay-differential

systems O. Toker and H. Ozbay

INFORMATION

Information on MCSS including tables of contents is available at its home pages:

<http://www.cwi.nl/cwi/departments/BS3/mcss.html>

<http://www.math.rutgers.edu/~sontag/mcss.html>

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----- end -----

IPNet Digest Volume 4, Number 06 June 30, 1997

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

Today's Topics:

Book: Inverse Problems in Medical Imaging & Nondestructive Testing
Research Summary: Ill-Posed Problems in Spectrum Analysis
Research Summary: Inverse Problems & Complex Proc. Analysis
Announcement: SIAM Conference on Applied Linear Algebra
Table of Contents: SIAM J. Matrix Analysis and Applications
Table of Contents: SIAM J. Scientific Computing
Table of Contents: SIAM J. Applied Mathematics
Table of Contents: J. Math. Systems, Estimation, and Control
Table of Contents: Numerical Algorithms

Submissions for IPNet Digest:

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Information about IPNet:

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<http://www.mth.msu.edu/ipnet>

From: "PROF.HEINZ W. ENGL" <engl@indmath.uni-linz.ac.at>
Subject: New book
Date: Sat, 14 Jun 1997

The following book has just appeared:

Heinz W.Engl, Alfred K. Louis, William Rundell (eds.)
Inverse Problems in Medical Imaging and Nondestructive Testing
Springer Vienna/New York, ISBN 3-211-83015-4

The volume contains 14 papers presented at our Oberwolfach meeting on
this
topic that took place in February 1996.

Heinz Engl, Linz, Austria

| | |
|-----------------------------------|--|
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| Altenbergerstrasse 69 | secretary: ext.9220; as Dean: ext.312 |
| A-4040 Linz | Fax:ext. 855, in Dean's affairs:ext.396 |
| Oesterreich / Austria | home phone: +43-(0)732-245518 |
| World Wide Web: | http://www.indmath.uni-linz.ac.at/ |

From: barbares@dedale.thomson-csf.fr
Subject: ill-posed problems in super-resolution spectrum analysis
Date: Mon, 16 Jun 97

I work in regularization methods applied to ill-posed problems in
super-resolution spectrum analysis (Autoregressive spectrum, Minimum
Variance spectrum, Unitary Hessenberg spectrum, ...). I have developed

a regularized version of Burg algorithm via a regularized Burg reflexion coefficient. I have regularized EVD (Eigen Value Decomposition) of Complex Toeplitz Hermitian matrix with a recursive (rank-one modification of successive matrices), EVD algorithm and regularized reflexion coefficients. These methods have been described in papers published in GRETSI-95, EUSIPCO-96, ICASSP-97 and GRETSI-97.

If you work also in regularization methods applied to spectrum analysis, could you sent me information by post or e-mail at the following address :

Frederic BARBARESCO
THOMSON-CSF AIRSYS RD/RAN
Radar Unit
Algorithms & New Concepts Department
7/9, rue des Mathurins
92221, BAGNEUX Cedex
FRANCE
phone : 33.1.40.84.20.04
fax : 33.1.40.84.36.31
E-mail : barbaresco@airsys.thomson.fr

From: pointltd@glasnet.ru
Subject: Inverse Problems Technique for the Complex Processes Analysis
Date: Mon, 23 Jun 1997

Dear colleagues!

In previous IPNet Digest Vol.4, No.3,4,5 theoretical substantiation of significant informatibility increase for experiment processing is submitted. What does it give practically?

For experimental research, when measurements are limited it permits to carry out such observations, when accessible measurements can to guarantee maximum reception of the useful information about unknown properties of object or process.

For example, over temperature observations in single(!) point of a specimen, which was heated up to some condition and cooled down on air (the experiment is carried out J.Beck), the given approach can to find:

- - Thermal conductivity coefficient of a specimen;
- - Heat-transfer coefficient from its lateral surface;
- - Non-uniformity of specimen initial state;
- - Boundary temperatures time changes;
- - And even to establish a measurement position.

For other widespread practice case, when the general mathematical model is unknown, offered approach permits to carry out the analysis of object behaviour peculiarities as a whole on observation over its condition in part.

For example, the use of offered approach for processing only one phase observation permits to establish dynamics of complex three-phase system (liquid-vapour-superfluid) and to analyze all phase conversions. Such problem arises at research of macro interaction peculiarities of

superfluid helium in a channel. Important to note, that the analysis of all processes is received by use only single-phase model. Results of identification have allowed to establish structure of general mathematical model.

The similar methods of experimental data interpretation are based in special use of inverse problems. They are constructed on decision of the following questions:

1. Reduction principle for inverse problems solutions;
2. Decomposition principle for inverse problems statement;
3. Conceptual analysis for modeling by inverse problems.

The main idea based on association of mathematical modeling under inverse problems with experimental data interpretation. It permits considerably to expand area of application of traditional mathematical models.

Thus, offered approach at essential restrictions on direct measurements of object state and its property, permits nevertheless to receive a maximum useful information. The offered approach can actively be used in wide class of problems, switching on, thermophysics, reology, materialogy, chemical kinetic, biochemistry, pharmacology, physics of plasma etc.

For everybody who are interested in receiving the answers on these questions please contact with me via e-mail. I should like to send the summary and papers.

Best regards
Romanovski M.R.
pointltd@glas.apc.org

From: flores@siam.org
Subject: Sixth SIAM Conference on Applied Linear Algebra
Date: Fri, 27 Jun 97

Dear Colleagues:

The advance program schedule, including information on hotel, transportation, and registration for the Sixth SIAM Conference on Applied Linear Algebra is now available on the World Wide Web. Visit

<http://www.siam.org/meetings/la97/la97home.htm>

If you have any further inquiry, please contact the SIAM Conference Department, phone: 215-382-9800; fax: 215-386-7999; e-mail: meetings@siam.org

See you in Snowbird!

Alan George, Conference Chair
Sixth SIAM Conference on Applied Linear Algebra
October 29-November 1, 1997
Snowbird Ski & Summer Resort, Snowbird, Utah

From: sisson@siam.org
Subject: Contents, SIAM Journal on Matrix Analysis and Applications
Date: Wed, 28 May 97

The Minimum Eigenvalue of a Symmetric Positive-Definite Toeplitz Matrix
and Rational Hermitian Interpolation Wolfgang Mackens and Heinrich Voss

Estimating the Attainable Accuracy of Recursively Computed Residual
Methods Anne Greenbaum

Fast Nested Dissection for Finite Element Meshes
Shang-Hua Teng

An Efficient Implementation of the Nonsymmetric Lanczos Algorithm
David Day

On Computing Stable Lagrangian Subspaces of Hamiltonian Matrices and
Symplectic Pencils Wen-Wei Lin and Chern-Shuh Wang

The Matrix Sign Function Method and the Computation of Invariant
Subspaces
Ralph Byers, Chunyang He, and Volker Mehrmann

Implicitly Restarted Krylov Subspace Methods for Stable Partial
Realizations
Imad M. Jaimoukha and Ebrahim M. Kasenally

A Geometric Approach to Perturbation Theory of Matrices and Matrix
Pencils. Part I: Versal Deformations
Alan Edelman, Erik Elmroth, and Bo Kagstrom

On the Shape of the Symmetric, Persymmetric, and Skew-Symmetric Solution
Set Gotz Alefeld, Vladik Kreinovich, and Gunter Mayer

An Analysis of Spectral Envelope Reduction via Quadratic Assignment
Problems Alan George and Alex Pothen

Perturbation of Eigenvalues of Preconditioned Navier-Stokes Operators
Howard C. Elman

Extension of Isometries in Finite-Dimensional Indefinite Scalar Product
Spaces and Polar Decompositions
Yuri Bolshakov, Cornelis V. M. van der Mee, Andre C. M. Ran, Boris
Reichstein, and Leiba Rodman

Perturbation Analyses for the QR Factorization
Xiao-Wen Chang, Christopher C. Paige, and G. W. Stewart

From: Edward Sisson, Production Editor

From: sisson@siam.org
Subject: Contents, SIAM Journal on Scientific Computing
Date: Mon, 02 Jun 97

A High-Order Godunov-Type Scheme for Shock Interactions in Ideal
Magnetohydrodynamics Wenlong Dai and Paul R. Woodward

An Iterative Riemann Solver for Relativistic Hydrodynamics
Wenlong Dai and Paul R. Woodward

An Adaptive Mesh Projection Method for Viscous Incompressible Flow
Louis H. Howell and John B. Bell

Merging Computational Elements in Vortex Simulations
Louis F. Rossi

A Linearized Crank-Nicolson-Galerkin Method for the Ginzburg-Landau
Model Mo Mu

Accuracy Enhancement for Higher Derivatives Using Chebyshev Collocation
and a Mapping Technique Wai Sun Don and Alex Solomonoff

Efficient Derivative Codes Through Automatic Differentiation and
Interface Contraction: An Application in Biostatistics
P. Hovland, C. Bischof, D. Spiegelman, and M. Casella

Mean-Square Numerical Methods for Stochastic Differential Equations with
Small Noises G. N. Milstein and M. V. Tret'yakov

Fast and Exact Simulation of Stationary Gaussian Processes Through
Circulant Embedding of the Covariance Matrix
C. R. Dietrich and G. N. Newsam

Subspace Orthogonalization for Substructuring Preconditioners for
Non-self-adjoint Elliptic Problems Gerhard Starke

Numerical Methods for a Nonconvex Optimization Problem Modeling
Martensitic Microstructure
Roy A. Nicolaides, Noel Walkington, and Han Wang

Asymptotic Expansion of the Free-Space Green's Function for the Discrete
3-D Poisson Equation Richard H. Burkhart

The Orthogonal qd-Algorithm Urs von Matt

Domain Decomposition Using Spectral Expansions of Steklov-Poincare
Operators II: A Matrix Formulation Ramesh Natarajan

Implementation of Jacobi Rotations for Accurate Singular Value
Computation in Floating Point Arithmetic Zlatko Drmac

Regularization by Truncated Total Least Squares
R. D. Fierro, G. H. Golub, P. C. Hansen, and D. P. O'Leary

From: Edward Sisson, Production Editor

From: thomas@siam.org
Subject: Contents, SIAM Journal on Applied Mathematics
Date: Mon, 16 Jun 97

SIAM Journal on Applied Mathematics August 1997 Vol. 57, No. 4
Table of Contents

Phase Transition in van der Waals Fluid
Din-Yu Hsieh and Xiao-Ping Wang

Hyperbolicity and Optimal Coordinates for the Three-Dimensional
Supersonic Euler Equations W. H. Hui and Yuanping He

On the Modulational Instability of $O(1)$ Amplitude Waves in Supersonic
Boundary Layers Philip Hall and Demetrios T. Papageorgiou

Shear Band Formulation Due to a Thermal Flux Inhomogeneity
J. A. DiLellio and W. E. Olmstead

Vortical Flow Outside a Sphere and Sound Generation
Omar M. Knio and Lu Ting

Viscous Fingering: An Optimal Bound on the Growth Rate of the Mixing
Zone Felix Otto

Dynamic and Steady-State Behavior of Continuous Sedimentation
Stefan Diehl

Global Asymptotic Behavior of a Chemostat Model with Discrete Delays
Gail S. K. Wolkowicz and Huaxing Xia

Aggregation, Blowup, and Collapse: The ABC's of Taxis in Reinforced
Random Walks Hans G. Othmer and Angela Stevens

Behavior Changes in SIS STD Models with Selective Mixing
James M. Hyman and Jia Li

Local Tomography II
Adel Faridani, David V. Finch, Erik L. Ritman, and Kennan T. Smith

Local Tomography for the Generalized Radon Transform
A. I. Katsevich

Dynamical Hysteresis Without Static Hysteresis: Scaling Laws and
Asymptotic Expansions
Guillermo H. Goldsztein, Fernando Broner, and Steven H. Strogatz

From: Kelly Thomas, Production Editor

From: hyman@birkhauser.com (Elizabeth Hyman)
Subject: Table of Contents, JMSEC
Date: Mon, 16 Jun 1997

J. of Mathematical Systems, Estimation, and Control 1997 Vol. 7, No.
3

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Finite-Dimensional Attractors of Weak Solutions to von Karman Plate
Model I. Lasiecka

On Uniform Stabilizability and the Margin of Stabilizability
G.H. Peich and C. Wang

A Finite Element Method for an Initial Value Inverse Problem with
Overspecified Boundary Data Tao Lin and Bingyu Zhang

Continuous-Time Gauss-Markov Processes with Fixed Reciprocal Dynamics
Alessandro Beghi

Summary: Generalized Isoperimetric Problem
A.J. Krener and S. Nikitin

Summary: Robust and Risk-Sensitive Output Feedback Control for Finite
State Machines and Hidden Markov Models
J.S. Baras and M.R. James

Summary: The Value Function of a Slow Growth Control Problem with State
Constraints M. Motta and F. Rampazzo

Summary: Equivalent Conditions for the Solvability of Nonstandard
LQ-Problems with Applications to P.D.E.s with Continuous Input-Output
Solution Map C. McMillan

Submitted by Edwin F. Beschler, Birkhauser Boston

From: Baltzer Science <mailer@ns.baltzer.nl>
Subject: Numerical Algorithms content list
Date: Mon, 23 Jun 1997

Numerical Algorithms 1997 Volume 15, Number 1
Table of Contents

Uniform B-spline approximation in Sobolev spaces Ulrich Reif

On some structured inverse eigenvalue problems
Robert Erra and Bernard Philippe

Low-rank revealing UTV decompositions
Ricardo D. Fierro and Per Christian Hansen

Improved cyclic reduction for solving queueing problems
Dario Andrea Bini and Beatrice Meini

Gaussian quadrature and acceleration of convergence M. Kzaz

Chebyshev rational interpolation Luca Gemignani

Formal continued fractions solutions of the generalized second order
Riccati equations, applications C. Arnold

Book reviews Claude Brezinski

More information on this journal:

<http://www.baltzer.nl/numa/>

Sincerely,
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mailer@ns.baltzer.nl
----- end -----

IPNet Digest Volume 4, Number 07 July 31, 1997

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

Today's Topics:

Announcement: UK Workshops on Inverse Problems
Announcement: SIAM Conferences on Control and Systems, Waves
Conference Proceedings: Inverse & Algebraic Quantum Scattering
New Book: Parallel Optimization: Theory, Algorithms, & Applic.
Position: University of Vienna
Table of Contents: SIAM J. Optimization
Table of Contents: SIAM J. Mathematical Analysis
Table of Contents: SIAM Review
Table of Contents: SIAM J. Control and Optimization

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Information about IPNet:

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<http://www.mth.msu.edu/ipnet>

From: Dr Bill Lionheart <wrbllionheart@brookes.ac.uk>
Subject: UK Workshops on Inverse Problems
Date: Fri, 11 Jul 1997

UK Workshop on Inverse Problems

The next UK workshop on inverse problems on Monday August 18 1997, at Loughborough University, UK.

The program of the workshop is as follows:

12:00-12:50. Prof. Hideo Soga (Ibaraki University, Japan) "Inverse elastic scattering"
12:50-14:00 Lunch
14:00-14:50. Dr. J. Gottlieb (Karlsruhe University, Germany) "Inverse problems in enviromental sciences"
14:50-15:10. Coffee break
15:10-16:00. Prof. A.P.Katchalov (Steklov Math. Inst, St-Petersburg, Russia) "Gaussian beams and inverse problems"

(Note: It may happen that there will be an additional lecture by Dr. Y.V.Kurylev "Operator scheme for the Gel'fand inverse problem" preceeding the lecture by Prof. Katchalov, i.e. at 15:10-16:00 with the lecture of Prof. Katchalov to take place at 16:15-17:05. I'll notify evryone shortly whether my lecture will take place or not). Everyone is most welcome (inspite of quite an unusual time for workshops!).

Yaroslav Kurylev
Dept. of Mathematical Sciences
Loughborough University
Loughborough LE11 3TU
e-mail: Y.V.Kurylev@lboro.ac.uk
tel: 01509-223180

P.S. I'll be glad to meet the participants arriving by train at the station and to send maps of the campus and surrounding area to those

arriving by car.

=====

This is one of a series of one day Workshops on Inverse Problems organised three times a year in the United Kingdom. For further details please contact Slava Kurylev, as above or myself, Bill Lionheart wrblionheart@brookes.ac.uk

From: flores@siam.org
Subject: SIAM Conference Announcements
Date: Mon, 14 Jul 97

Announcing...

Fourth SIAM Conference on Control and Its Applications
Sponsored by SIAM Activity Group on Control and Systems Theory
May 7-9, 1998
Omni Jacksonville Hotel
Jacksonville, Florida

Conference Chair: Suzanne Lenhart
University of Tennessee, Knoxville

Minisymposium proposals and abstract submissions are invited. For further information about the conference and how to send your abstracts, visit the SIAM Web page at:

<http://www.siam.org/meetings/ct98/ct98home.htm>

or contact the SIAM Conference Department by e-mail at:
meetings@siam.org; phone: 215-382-9800; fax: 215-386-7999.

=====

Announcing...

Fourth International Conference on Mathematical and Numerical Aspects of Wave Propagation
Conducted by SIAM with the cooperation of INRIA
June 1-5, 1998
Colorado School of Mines
Golden Colorado

Conference Chair: John A. DeSanto
Colorado School of Mines

Minisymposium proposals and abstract submissions are invited. For further information about the conference and how to send your abstracts, visit the SIAM Web page at:

<http://www.siam.org/meetings/wp98/wp98home.htm>

or contact the SIAM Conference Department by e-mail at:
meetings@siam.org; phone: 215-382-9800; fax: 215-386-7999.

From: san@i04ktha.desy.de (M. Sander)
Subject: Conference Proceedings
Date: Tue, 1 Jul 1997

Dear Colleagues,

New conference proceedings have just been published:

B. Apagyi, G. Endredi, P. Lavay (Eds.)
Inverse and Algebraic Quantum Scattering Theory
Proceedings, Lake Balaton, Hungary 1996
Springer Lecture Notes in Physics 488,
Springer Verlag, Berlin (1997)
ISBN 3-540-63021-X

This volume contains three interrelated, beautiful, and useful topics of quantum scattering theory: inverse scattering theory, algebraic scattering theory and supersymmetrical quantum mechanics. The contributions cover such issues as coupled-channel inversions at fixed energy, inversion of pion-nucleon scattering cross-sections into potentials, inversions in neutron and x-ray reflection, 3-dimensional fixed-energy inversion, inversion of electron scattering data affected by dipole polarization, nucleon-nucleon potentials by inversion versus meson-exchange theory, meson-nucleon and meson-meson potentials from Gelfand-Levitan-Marchenko, potential reversal and reflectionless impurities in periodic structures, quantum design in spectral, scattering, and decay control, solution hierarchy of Toda lattices, etc.

Fields of interest:

Nuclear Physics, Elementary Particle Physics, Dynamical Systems, Nonlinear Dynamics, Chaos For physicists, mathematicians, and researchers

It is a sequel to

H.V. von Geramb (Ed.)
Quantum Inversion - Theory and Applications
Proceedings, Bad Honnef, Germany 1993
Springer Lecture Notes in Physics 427,
Springer Verlag, Berlin (1994)
ISBN 3-540-57576-6

From: Yair Censor <yair@mathcs2.haifa.ac.il>
Subject: New Book on Parallel Optimization.
Date: Tue, 1 Jul 1997

We are pleased to announce the publication of our new book, available July 1997:

PARALLEL OPTIMIZATION : THEORY, ALGORITHMS, AND APPLICATIONS

By Yair Censor and Stavros A. Zenios,

A volume in the series: "Numerical Mathematics and Scientific Computation", Oxford University Press, New York, 1997.

Hardcover, 576 pages.

=====

This book offers a unique pathway to methods of parallel optimization by introducing parallel computing ideas into both optimization theory and into some numerical algorithms for large-scale optimization problems. The three parts of the book bring together relevant theory, careful study of algorithms, and modeling of significant real-world problems such as image reconstruction from projections, radiation therapy treatment planning, multi-commodity network flow problems, planning under uncertainty, and matrix balancing problems.

In the remainder of this message you will find ordering information, directions to home pages on the internet where further information on the book may be found, and the [edited] Table of Contents of the book.

Ordering Information:

A special 20% discount offer is available for this new book from the publisher, Oxford University Press.

To order from the United States call toll-free 1-800-451-7556 or fax (919) 677-1303. From outside the U.S. phone (919) 677-0977.

The special discount price is \$60.00 (\$75.00 list price), plus \$3.50 shipping and handling. Please identify the book by author and title (Censor and Zenios: Parallel Optimization).

The ISBN is 0-19-510062-X.

The special promotion code for this offer is: I664-1 and the item number is 1.

Orders may also be mailed to: Oxford University Press, 2001 Evans Road, Cary, NC 27513, USA. Oxford accepts payment by check or credit card (Visa, Master Card, American Express). Please include your credit card number and expiration date--along with your mailing address--if ordering by fax or by mail.

Directions to more Information:

The Table of Contents of the book is appended to this message. For more information on the book (Title Page, Foreword, Preface, Organization of the Book, Suggested Course Outlines, Acknowledgements), please visit on the internet either one of the authors' home pages:

<http://www.ucy.ac.cy/ucy/pba/zenios/>

or

<http://s3.haifa.ac.il/math/censor.html>

or the publisher at

http://www.oup-usa.org/gcdocs/gc_019510062X.html

=====

PARALLEL OPTIMIZATION : THEORY, ALGORITHMS, AND APPLICATIONS
Yair Censor and Stavros A. Zenios

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From: Arnold Neumaier <neum@cma.univie.ac.at>
Subject: Position at the University of Vienna
Date: Wed, 16 Jul 1997

Position at the University of Vienna

The Institute for Mathematics of the University of Vienna invites applications for a tenure track assistant position (Universit"atsassistent) in Computational Mathematics. The initial contract is for 4 years.

The Computational Mathematics group (URL: <http://solon.cma.univie.ac.at>) is currently primarily involved in the development of high quality software for global optimization and in interdisciplinary applications of optimization (e.g., to protein folding). The successful applicant will participate in these developments. He/she will also be responsible for the administration of our network of Unix workstations. There are also some teaching duties (tutorials).

Especially welcome are applicants who have

- - excellent practical knowledge of numerical methods for optimization and linear algebra, and
- - excellent programming skills in Fortran, C, Matlab
- - knowledge and experience with system administration (Unix)

Candidates must be citizens of the European Union or the European Economic Area (EWR) and have a university degree in Mathematics or Computer Science.

Interested researchers should contact
Prof. Arnold Neumaier (neum@cma.univie.ac.at)
as soon as possible, but not later than August 20, 1997.

From: wunderlich@siam.org
Subject: Contents, SIAM Journal on Optimization
Date: Wed, 09 Jul 97

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From: Deidre Wunderlich, Editorial Associate

From: poulson@siam.org
Subject: SIMA 28-5 Table of Contents
Date: Wed, 23 Jul 97

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From: Deborah Poulson, Production Editor

From: poulson@siam.org
Subject: SIREV 39-3 Table of Contents
Date: Fri, 25 Jul 97

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From: Deborah Poulson, Production Editor

From: thomas@siam.org
Subject: Contents, SIAM Journal on Control and Optimization
Date: Mon, 28 Jul 97

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Weighted Means in Stochastic Approximation of Minima
J. Dippon and J. Renz

From: Kelly Thomas, Production Editor
----- end -----

IPNet Digest Volume 4, Number 08 August 31, 1997

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

Today's Topics:

Symposium Update: Inverse Problems in Engineering Mechanics '98
Announcement: International Congress of Mathematicians '98
Proceedings: Inverse Problems in Heat Transfer and Fluid Flow
Table of Contents: Inverse Problems
Table of Contents: SIAM J. Applied Mathematics
Table of Contents: SIAM J. Matrix Analysis and Applications
Table of Contents: Mathematics of Control, Signals, and Systems
Table of Contents: Linear Algebra and Its Applications
Table of Contents: Advances in Computational Mathematics

Submissions for IPNet Digest:

Mail to ipnet-digest@math.msu.edu

Information about IPNet:

Mail to ipnet-request@math.msu.edu
<http://www.mth.msu.edu/ipnet>

From: dtanaka@gipwc.shinshu-u.ac.jp (Masa. Tanaka)
Subject: ISIP98-Int.Symp.Inverse Problems in Eng. Mech.
Date: Wed, 27 Aug 1997

RE:

International Symposium on Inverse Problems in Engineering Mechanics, ISIP'98, to be held on March 24-27, 1998 in Nagano/Japan

Dear Colleagues,

With my pleasure I would like to inform you that arrangements of the above Symposium are progressing well. We have just up-dated the Web page of the Symposium:

<http://homer.shinshu-u.ac.jp/ISIP98>

so that detailed information on the registration is now available. I hope, you will visit the Web page and check it out.

For a long time I have been negotiating with the Japanese Government, but a concrete framework of the financial support has been not yet clear. Eventually, however, parts of travel expenses and stay costs for some of selected participants could be covered by this financial support. Your helpful understanding of the financial situation of this symposium would be appreciated.

On the other hand, I would like to remind you that the deadline date of extended abstracts is September 1, 1997. We have already received a considerable number of abstracts, but we have to still receive more abstracts toward a successful symposium. Your participation and abstract submission of your own papers would be highly appreciated.

Looking forward to hearing from you, with best thanks and kindest regards,

Yours sincerely,
Masa. Tanaka
Nagano: August 27, 1997

PS: Please ignore this reminder if you have already submitted your abstracts or declared your participation.

From:

Prof. Masataka TANAKA
Department of Mechanical Systems Engineering
Faculty of Engineering
SHINSHU UNIVERSITY
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- * CAE Systems Labo. Web Page:
<http://homer.shinshu-u.ac.jp/caesyslab/lab-index.html>
- ** ISIP'98 Intl. Symp. on Inverse Problems:
<http://homer.shinshu-u.ac.jp/ISIP98/>
- # The 1998 Winter Olympic Games will be held in Nagano.
<http://www.nagano.olympic.org/index.html>

From: helmberg@zib.de (Christoph Helmberg)
Subject: First Announcement of ICM'98
Date: Mon, 18 Aug 1997

| | |
|------------------------------|-----|
| First Announcement of ICM'98 | |
| International Congress | MCM |
| of Mathematicians | XCV |
| Berlin, Germany | III |
| August 18-27, 1998 | ICM |

First Announcement

The Organizing Committee is pleased to announce that the next International Congress of Mathematicians will take place in Berlin, Germany, from Tuesday, August 18, through Thursday, August 27, 1998.

It will be held under the auspices of the International Mathematical Union (IMU) and sponsored by many other institutions.

Mathematical Program

Responsibility for the scientific program lies with the Program Committee appointed by IMU. There will be about twenty one-hour Plenary Lectures covering recent developments in the major areas of mathematics and about 170 forty-five-minute Invited Lectures in nineteen sections. The sections are as follows:

1. Logic
2. Algebra
3. Number Theory and Arithmetic Algebraic Geometry
4. Algebraic Geometry
5. Differential Geometry and Global Analysis
6. Topology
7. Lie Groups and Lie Algebras
8. Analysis

9. Ordinary Differential Equations and Dynamical Systems
10. Partial Differential Equations
11. Mathematical Physics
12. Probability and Statistics
13. Combinatorics
14. Mathematical Aspects of Computer Science
15. Numerical Analysis and Scientific Computing
16. Applications
17. Control Theory and Optimization
18. Teaching and Popularization of Mathematics
19. History of Mathematics

Every registered participant (traditionally called Ordinary Member) of the Congress will have the opportunity to give a short presentation, either during a poster session or in the form of a fifteen-minute lecture. A formal call for such presentations will be issued in the Second Announcement. Informal mathematical seminars may be organized at the initiative of groups of participants. English, French, German, and Russian are the official languages of the Congress.

All Plenary and Invited Lectures will be published in the Proceedings of ICM'98; after the Congress, a complimentary copy of these Proceedings will be sent to each Ordinary Member. Abstracts of all lectures and of all short presentations will be distributed free of charge to Ordinary Members at Congress check-in.

The Fields Medals and the Nevanlinna Prize will be awarded during the Opening Ceremony on the first day of the Congress. This will take place in the International Congress Center Berlin (ICC); all other scientific events will be held at Technische Universitaet Berlin. No scientific activities are scheduled for Sunday, August 23.

In an effort to reach out to a wider audience, the ICM'98 organizers have initiated several cultural activities related to mathematics that are attractive to the general public. In particular, there will be a VideoMath Festival, software demonstrations, talks about mathematics and its relations to other subjects, several exhibitions ('Mathematics in the Arts', etc.), and other events ('Mathematics and Music', etc.).

Special consideration will be given to the impact of the Nazi regime on mathematics in Berlin and Germany.

Social Events

On August 18, a buffet-banquet for all registered participants will be held at noon directly after the Opening Ceremony in the ICC. During the Congress, a number of guided tours of Berlin, visits to museums, and walking tours will be offered. On Sunday, August 23, it will be possible to choose from several excursions. For that evening, tickets have been reserved for the opera 'The Magic Flute' at the Deutsche Oper. Registered participants may purchase tickets in advance for these events as well as for many day trips and pre- or post-congress tours to places of interest in the vicinity of Berlin.

Organization

Up-to-date information about all aspects of ICM'98 is available on the following website:

<http://elib.zib.de/ICM98>

This includes information about registration, abstract submission, etc. Correspondence should be directed to

icm98@zib.de

It will be forwarded to an appropriate member of the Organizing Committee. If electronic communication is not available you may also write to

ICM'98
c/o Prof.Dr. J. Winkler
TU Berlin, MA 8-2
Strasse des 17. Juni 135
D-10623 Berlin, Germany
FAX: +49/30/314-21604

Registration and Accommodation

DER-CONGRESS, a professional congress and tour organizer, has been appointed by the Organizing Committee to handle all non-scientific matters for individual participants: registration to the Congress and the social events, hotel reservation, tourist program, collection of registration fees, etc. The formal registration procedure for the Congress will be described in the Second Announcement (see below).

Participants will be housed in a variety of hotels in Berlin; the necessary reservations have already been made by DER-CONGRESS. In addition, DER-CONGRESS will make student residences available and will provide a certain amount of private accommodation at a cheap rate for participants willing to accept less comfort. Detailed information on locations and rates will be provided in the Second Announcement.

Forms for registration and accommodation requests will be made available on the ICM'98 server in January 1998.

Second Announcement

The Second Announcement of ICM'98 will describe the activities of the Congress in more detail and give instructions on how to complete the registration process and obtain accommodation. It will provide more, although not complete, information on the scientific program, contain a call for contributed short presentations, and give instructions regarding the submission of abstracts.

The Second Announcement will also include advice on how to proceed upon arrival at airports and train stations, and it will be accompanied by a brochure describing the day trips and tours organized by DER-CONGRESS.

Several conferences of a more specialized nature are scheduled immediately before or after ICM'98. The Second Announcement will also contain a list of such 'satellite conferences'.

To receive the Second Announcement, fill out the form on the ICM'98 server (<http://elib.zib.de/ICM98>). Alternatively, send an empty e-mail to icm98@zib.de with 'Second Announcement' in the 'SUBJECT' line to

receive an e-mail form. If this is not possible for you, please fill out the form below and send it to the ICM'98 Secretary Prof. Winkler (see address above).

The Second Announcement will be mailed from Berlin at the beginning of 1998.

I would like to receive the Second Announcement of ICM'98.

Name:

last/family/surname:

first/given name:

middle name/initial:

Address:

institution:

street and number:

postal code:

city:

country:

E-mail:

From: James Beck <beck@egr.msu.edu>
Subject: ASME Proceedings
Date: Wed, 20 Aug 1997

ASME Proceedings of the 32nd National Heat Transfer Conference
Volume 2

INVERSE PROBLEMS IN HEAT TRANSFER AND FLUID FLOW

presented at
The 32nd National Heat Transfer Conference, Baltimore, Maryland

AUGUST 8-12, 1997

edited by

George S. Dulikravich
Pennsylvania State University

Keith A. Woodbury
University of Alabama

The America Society Of Mechanical Engineers
United Engineering Center 34 East 47 th Street New York, NY. 10017

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From: Janet Thomas <janet.thomas@ioppublishing.co.uk>
Subject: Inverse Problems contents list
Date: Fri, 01 Aug 1997

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From: thomas@siam.org
Subject: Contents, SIAM Journal on Applied Mathematics
Date: Fri, 22 Aug 97

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From: Kelly Thomas, Production Editor.

From: tschoban@siam.org

Subject: Contents SIAM Journal on Matrix Analysis and Applications

Date: Tue, 26 Aug 97

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From: Edward Sisson, Production Editor.

From: Secretary Support - Magrijn <magrijn.secsup@tip.nl>
Subject: Journal MCSS - latest issue
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From: Hans Schneider <hans@math.wisc.edu>
Subject: Contents LAA vols 264, 265
Date: Mon, 4 Aug 1997

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From: Baltzer Science <mailer@ns.baltzer.nl>
Subject: Advances in Computational Mathematics content list
Date: Thu, 7 Aug 1997

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Web Site: Russian "Inverse Problems in Engineering"
Post-Doctoral Position: Comp. Physics and Signal Processing
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CDROM Available: Electronic Transactions on Numerical Analysis
Web Site: The Technology Navigator
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 Table of Contents: Linear Algebra and Its Applications
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Information about IPNet:

Mail to ipnet-request@math.msu.edu
<http://www.mth.msu.edu/ipnet>

From: Sean Walker <swalker@geop.ubc.ca>
Subject: Problem
Date: Tue, 16 Sep 1997

Hello,

I am presently working on the following problem:

Given a set of data, d , which depend upon a continuous model, m , as well as a set of n other discrete parameters x , such that, $d = f(m, x)$. I am working on a method of recovering both m and x through a regularized inversion scheme.

I know of two examples where such problems have been solved:

- 1) Pavlis & Booker(1980) solved this problem when inverting seismic arrival data to recover earthquake location(parameters) and velocity structure(continuous function)
- 2) deGroot-Hedlin(1991) solved this problem when inverting magnetotelluric data to recover static shift errors(parameters) and conductivity structures(continuous function)

I am interested in finding references in which people have solved problems of this type, or have addressed concerns associated with solving such problems.

Thanks
Sean Walker

Dear Sirs!

An Information regarding activity of Russian Association "Inverse Problems In Engineering" (Chairman: Prof. Oleg.M. Alifanov) may be found at following sites:

<http://g23.relcom.ru/g23/5037>

<http://www.infoline.ru/g23/5037>

Freeware direct and inverse thermal conductivity solver HeatCad may be downloaded from:

http://www.infoline.ru/g23/5037/A_ALEKS.HTM

Sincerely yours

Aleksey Alekseev

From: "Eric L. Miller" <elmiller@ece.neu.edu>
Subject: Submission of job opening
Date: Tue, 23 Sep 1997

Post-Doctoral Research Position Available at Northeastern University in Computational Physics and Signal Processing.

Description: As part of a Multidisciplinary University Research Initiative aimed at the detection, localization, and classification of buried land mines, a post-doctoral research position is available at Northeastern University in Boston, MA combining elements of computational physics and signal/image processing. The research will center around physics-based signal processing methods for solving the demining problem. The initial phase of the work will be directed toward the development of computationally efficient sensor models describing the diffusion and/or propagation of energy through the earth, the interaction of the energy with buried objects, and the process of measuring the resulting scattered fields. In particular, models for low frequency electromagnetic inductive systems and radio frequency ground penetrating radar sensors are of interest. The second portion of the research will center on the development of signal and image processing algorithms based on these models for mine detection, localization, and classification. Of interest here are statistical signal processing methods employing elements of decision and estimation theory which are robust to sensor noise and environmental clutter.

Requirements: A Ph.D. and strong analytical skills in a field relevant to the above described work (eg. Electrical Engineering, Mathematics, Physics, Geoscience etc.) with experience in at least a subset of the following areas:

1. Statistical signal processing,
2. Computational electromagnetics,
3. Numerical analysis
4. Inverse scattering,
5. Multiscale methods including wavelets

The candidate will be expected to carry out research in an independent manner and if interested aid in the supervision of Master's and Doctoral level graduate students. Strong oral and written English skills are a must.

Funding is available for up to three years and I am looking for someone to start as soon as possible.

All interested applicants are invited to contact
Prof. Eric Miller
235 Forsyth Building
Northeastern University
Boston, MA 02115
Tel: 617-373-8386=09
Email: elmiller@ece.neu.edu
Web <http://www.cdsp.neu.edu/info/faculty/miller/miller.html>

for more information or to submit an application (CV, references, and a reprint of a published journal article).

From: Naoki Saito <saito@math.UCDavis.edu>
Subject: Change of address: Naoki Saito
Date: Mon, 1 Sep 1997

My dear friends and colleagues,

After 13+ years with Schlumberger, I decided to move on. I have just joined the Department of Mathematics, University of California at Davis as a tenured Associate Professor.

My new coordinate (effective immediately) is:

Naoki Saito
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(Note: Effective November 1, 1997, the area code will change from 916 to 530.)

Best wishes and please keep in touch!
Naoki Saito

From: Lothar Reichel <reichel@mcs.kent.edu>
Subject: ETNA on CDROM
Date: Sat, 13 Sep 1997

ETNA on CDROM

The Electronic Transactions on Numerical Analysis (ETNA) was one of the first completely electronic scientific journals when it was launched four years ago.

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 From: sgreenblatt@betac.com (Seth Greenblatt)
 Subject: The Technology Navigator
 Date: Thu, 04 Sep 1997

Hello everyone! I thought that this might be of interest to list members.

Gas temperature mapping using impedance tomography
D Baroudi and E Somersalo

Tomography with a finite set of projections: singular value
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On the inverse problem of the 3D telegraph equation
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On a general regularization scheme for nonlinear ill-posed problems
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Submitted by Janet Thomas, Production Editor
Institute of Physics Publishing
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and Regularizations in Space and Time Brian R. Wetton

Superconvergence of Numerical Solutions to Volterra Integral Equations
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A New Algorithm for Computing Liquid Crystal Stable Configurations: The
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Submitted by Beth Schad, Production Editor

From: Hans Schneider <hershkow@aluf.technion.ac.il>
Subject: ContentsDirect - Linear Algebra and Its Applications
Date: Sat, 20 Sep 1997

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Relative perturbation theory: (III more bounds on eigenvalue variation)
Li

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Submitted by Hans Schneider
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From: Baltzer Science <mailer@ns.baltzer.nl>

IPNet Digest Volume 4, Number 10 October 30, 1997

Today's Editors: Patricia K. Lamm and Thomas L. Scofield
Michigan State University

Today's Topics:

New Book: Integralgleichungen (Integral Equations)
Announcement: DAISY (Database for Identification of Systems)
Position: University of Maryland Baltimore County
Table of Contents: SIAM Review
Table of Contents: SIAM J. Control and Optimization
Table of Contents: SIAM J. Numerical Analysis
Table of Contents: SIAM J. Optimization
Table of Contents: SIAM J. Scientific Computing
Table of Contents: SIAM J. Applied Mathematics
Table of Contents: J. Math. Systems, Estimation, and Control
Table of Contents: Linear Algebra and Its Applications

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Information about IPNet:

Mail to ipnet-request@math.msu.edu
<http://www.mth.msu.edu/ipnet>

From: "PROF.HEINZ W. ENGL" <engl@indmath.uni-linz.ac.at>
Subject: book announcement
Date: Fri, 24 Oct 1997

The following textbook will appear in early November:

Heinz W. Engl
Integralgleichungen
(integral equations, in German)
Springer Vienna-New York
ISBN: 3-211-83071-5

Yours Sincerely

Heinz Engl

Prof.Dr.Heinz W. Engl E-Mail: engl@indmath.uni-linz.ac.at
Institut fuer Industriemathematik secretary:nikolaus@indmath.uni-linz.ac.at
Johannes-Kepler-Universitaet Phone:+43-(0)732-2468...,ext.9219 or
693, secretary: ext.9220; as Dean: ext.3220
Altenbergerstrasse 69 Fax:ext. 855, in Dean's
A-4040 Linz home phone: +43-(0)732-245518
affairs:ext.3225 World Wide Web: <http://www.indmath.uni-linz.ac.at/>
Oesterreich / Austria

From: Peter.DeGersem@esat.kuleuven.ac.be (Peter De Gersem)
Subject: Announcement of DAISY
Date: Wed, 15 Oct 1997

Announcement:

DAISY: A Database for Identification of Systems

<http://www.esat.kuleuven.ac.be/sista/daisy/>

Description:

DAISY is an Internet application, mainly consisting of a database of datasets used in system identification or time series analysis. The system can be used in two directions: you can download datasets from the database (e.g. to use them to compare or test identification algorithms), and you can upload datasets to the database (to make it possible for other people to use your datasets to verify their algorithms, or to reproduce or enhance your results). The datasets in the database are subject to a mild review, so that we can guarantee a certain level of quality.

Benefits:

DAISY is an answer to a real challenge in research in system identification and signal processing, namely to ensure the reproducibility of results, based on real data. Often datasets are used to illustrate algorithms in publications, but almost never these datasets are public, so nobody is able to verify the results stated. Using DAISY, this problem is history: if you need to verify your algorithm with a real-world example, you can use datasets from DAISY, or you can submit the dataset you used to DAISY. This way everybody can (try to) reproduce your results. Other benefits of DAISY include increased collaboration between researchers, the gradual evolution of certain datasets into benchmarks, and the publication of comparisons between different methods or algorithms.

Organisation:

DAISY is a website consisting of a page with the datasets (sorted by category), a page where you can submit datasets, and pages with relevant links, all publications and talks about DAISY, a bibliography and software overview, some hitting statistics, and last but not least the acknowledgments to our sponsors.

DAISY is being developed and maintained at the department of Electrical Engineering of the K.U.Leuven, in the research group SISTA, under the responsibility of Bart De Moor.

From: "THOMAS I. SEIDMAN" <SEIDMAN@UMBC2.UMBC.EDU>
Subject: position announcement
Date: Thu, 16 Oct 1997

Chair, Department of Mathematics and Statistics --

The University of Maryland Baltimore County (UMBC) invites applications for the position of Chair of the Department of Mathematics and Statistics. The successful candidate is expected to lead the faculty in the development of the department's instructional and research programs, including the anticipated filling of several open faculty positions over the next few years. Candidates should have an earned doctorate in mathematics, statistics, or a closely related field, and be qualified for appointment at the rank of full professor. The successful candidate is expected to be committed to excellence in undergraduate and graduate education, possess superior leadership and communication skills, and to maintain a strong research record.

The Department of Mathematics and Statistics offers programs

Stability Considerations for Numerical Methods Johnny Snyder

PROBLEMS AND SOLUTIONS

BOOK REVIEWS

Dynamics and Modelling of Ocean Waves (G. J. Komen, L. Cavaleri,
M. Donelan, K. Hasselmann, S. Hasselmann, and P. E. A. M. Janssen)
Sen-Huei Chen

The Transforms and Applications Handbook (Alexander D. Poularikas,
Editor) Lokenath Debnath

Maple: A Comprehensive Introduction (Roy Nicolaides and Noel
Walkington) Patrick Fitzpatrick

Probability Theory and Combinatorial Optimization (J. Michael Steel)
Alan Frieze

An Introduction to the Mathematical Theory of Inverse Problems
(Andreas Kirsch) Charles Groetsch

Handbook of Numerical Analysis. Vol. IV. Finite Element Methods
(Part 2) and Numerical Methods for Solids (Part 2) (P. G. Ciarlet and
J. L. Lions) Weimin Han

Functional Analytic Methods for Partial Differential Equations
(Hiroki Tanabe) R. Bruce Kellogg

Perturbation Theory in Mathematical Programming and Its Applications
(Evgenij S. Levitin) Wu Li

Numerical Solutions for Partial Differential Equations: Problem
Solving Using Mathematics (Victor G. Ganzha and Evgenii V. Vorozhtsov)
Biyue Liu

Computational Methods for Fluid Dynamics (Joel H. Ferziger and Milovan
Peric) K. W. Morton

On Spectral Theory of Elliptic Operators (Yuri Egorov and Vladimir
Kondratiev) Martin Schechter

Table of Integrals, Series, and Products (I. S. Gradshteyn and
I. M. Ryzik) Joseph J. Shirron

SELECTED COLLECTIONS

LATER EDITIONS

CHRONICLE

From: Deborah Poulson, Production Editor SIAM Review

From: smiley@siam.org

Subject: Contents, SIAM Journal on Control and Optimization

Date: Thu, 02 Oct 97

SIAM Journal on Control and Optimization November 1997 Vol. 35, No. 6
Table of Contents

Necessary Conditions for Optimal Impulsive Control Problems
G. N. Silva and R. B. Vinter

Dynamics and Approximations of a Velocity Tracking Problem for the
Navier-Stokes Flows with Piecewise Distributed Controls
L. S. Hou and Y. Yan

Annealing of Iterative Stochastic Schemes
Haitao Fang, Guanglu Gong, and Minping Qian

Exact Finite-Dimensional Filters for Maximum Likelihood Parameter
Estimation of Continuous-Time Linear Gaussian Systems
Robert J. Elliott and Vikram Krishnamurthy

System Identification by Dynamic Factor Models
C. Heij, W. Scherrer, and M. Deistler

Ergodic Control of Switching Diffusions
Mrinal K. Ghosh, Aristotle Arapostathis, and Steven I. Marcus

Averaging Theorems for Highly Oscillatory Differential Equations and
Iterated Lie Brackets Wensheng Liu

Risk-Sensitive and Robust Escape Criteria
Paul Dupuis and William M. McEneaney

Bolza Problems with General Time Constraints
P. D. Loewen and R. T. Rockafellar

Asymptotic Optimization of a Nonlinear Hybrid System Governed by a
Markov Decision Process Eitan Altman and Vladimir Gaitsgory

Perturbation Formula for Regular Free Boundaries in Elliptic and
Parabolic Obstacle Problems Srdjan Stojanovic

Approximations in Dynamic Zero-Sum Games II
Mabel M. Tidball, Odile Pourtallier, and Eitan Altman

NP-Hardness of Some Linear Control Design Problems
Vincent Blondel and John N. Tsitsiklis

On Approximate Solutions in Convex Vector Optimization Sien Deng

Optimal Control of Linear Periodic Resonant Systems in Hilbert Spaces
Viorel Barbu

Blackwell Optimality in Borelian Continuous-in-Action Markov Decision
Processes Alexander A. Yushkevich

A Control Method for Assimilation of Surface Data in a Linearized
Navier-Stokes-Type Problem Related to Oceanography
Aziz Belmiloudi and Françoise Brossier

Submitted by Ira D. Smiley, Production Editor.

From: tschoban@siam.org
Subject: Contents, SIAM Journal on Numerical Analysis
Date: Thu, 16 Oct 97

- Order Conditions for General Two-Step Runge-Kutta Methods
Ernst Hairer and Gerhard Wanner
- Parallel Domain Decomposition Solver for Adaptive hp Finite Element
Methods J. T. Oden, Abani Patra, and Yusheng Feng
- Implementation of Diagonally Implicit Multistage Integration Methods
for Ordinary Differential Equations
J. C. Butcher and Z. Jackiewicz
- Numerical Methods in the Weak Sense for Stochastic Differential
Equations with Small Noise G. N. Milstein and M. V. Tret'yakov
- Relaxation Schemes for Nonlinear Kinetic Equations
E. Gabetta, L. Pareschi, and G. Toscani
- Covolume Solutions of Three-Dimensional Div-Curl Equations
Roy Nicolaides and Xiaonan Wu
- On Order Conditions for Partitioned Symplectic Methods Ander Murua
- Multiwavelets for Second Kind Integral Equations
Tobias von Petersdorff, Christoph Schwab, and Reinhold Schneider
- Fully-Discrete Finite Element Analysis of Multiphase Flow in
Groundwater Hydrology Zhangxin Chen and Richard E. Ewing
- Convergence of a Multigrid Method for Elliptic Equations with Highly
Oscillatory Coefficients Bjorn Engquist and Erding Luo
- Spline Collocation Differentiation Matrices
Robert D. Russell and Weiwei Sun
- Numerical Solution of the Generalized Airfoil Equation for an Airfoil
with a Flap G. Monegato and I. H. Sloan
- The Optimal Convergence Rate of Monotone Finite Difference Methods for
Hyperbolic Conservation Laws Florin Sabac
- On the Locking of the Finite Element Method in Thermoelasticity
Eric Boillat
- Coupling of Mixed Finite Elements and Boundary Elements for a
Hyperelastic Interface Problem
Gabriel N. Gatica and Wolfgang L. Wendland
- Multidimensional Interpolatory Subdivision Schemes
Sherman D. Riemenschneider and Zuowei Shen
- A Field-Based Mixed Formulation for the 2-D Magnetostatic Problem
I. Perugia
- Is the Pollution Effect of the FEM Avoidable for the Helmholtz
Equation Considering High Wave Numbers
Ivo M. Babuska and Stefan A. Sauter

Stability Theory for Linear Inequality Systems II: Upper
Semicontinuity of the Solution Set Mapping
M. A. Goberna, M. A. Lopez, and M. I. Todorov

Integer Isotone Optimization Ming-Hong Liu and Vasant A. Ubhaya

Submitted by Deidre Wunderlich, Editorial Associate.

From: tschoban@siam.org
Subject: Contents, SIAM Journal on Scientific Computing
Date: Thu, 09 Oct 97

SIAM Journal on Scientific Computing November 1997 Vol. 18, No. 6
Table of Contents

Two-Grid Solution of Shock Problems Lars Ferm and Per Lotstedt

On the Choice of Wavespeeds for the HLLC Riemann Solver
P. Batten, N. Clarke, C. Lambert, and D. M. Causon

The Numerical Solution of the Biharmonic Equation by Conformal Mapping
Raymond H. Chan, Thomas K. DeLillo, and Mark A. Horn

Efficient Spectral-Galerkin Methods III: Polar and Cylindrical
Geometries Jie Shen

Fast Radix 2, 3, 4, and 5 Kernels for Fast Fourier Transformations on
Computers with Overlapping Multiply-Add Instructions S. Goedecker

Artificial Boundary Conditions for Computation of Oscillating External
Flows S. V. Tsynkov

Approximate Inverse Techniques for Block-Partitioned Matrices
Edmond Chow and Yousef Saad

Multi-p Preconditioners Ning Hu, Xian-Zhong Guo, and I. Norman Katz

Analysis of Projection Methods for Solving Linear Systems with
Multiple Right-Hand Sides Tony F. Chan and W. L. Wan

Numerical Solution of the Inverse Eigenvalue Problem for Real
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Multiple Bifurcation in the von Karman Equations
C.-S. Chien and M.-S. Chen

Element-by-Element Preconditioners for Large Partially Separable
Optimization Problems
Michel J. Dayde, Jean-Yves L'Excellent, and Nicholas I. M. Gould

Automatic Determination of an Initial Trust Region in Nonlinear
Programming A. Sartenaer

From: Edward Sisson, Production Editor

From: smiley@siam.org
Subject: Contents, SIAM Journal on Applied Mathematics
Date: Fri, 17 Oct 97

SIAM Journal on Applied Mathematics December 1997 Vol. 57, No 6
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Biological Pattern Formation on Two-Dimensional Spatial Domains:
Nonlinear Bifurcation Analysis
Gerhard C. Cruywagen, Philip K. Maini, and James D. Murray

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Averaged Motion of Charged Particles in a Curved Strip
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Stephanos Venakides

An Integral Equation Solution for the Steady-State Current at a
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Approximation of Electromagnetic Fields: Part I. Continuous
Problems Dongwoo Sheen

On an Inverse Diffusion Problem Alaeddin Elayyan and Victor Isakov

Wavelet Sampling and Localization Schemes for the Radon Transform
in Two Dimensions Shiyong Zhao, Grant Welland, and Ge Wang

Fast Quasi-continuous Wavelet Algorithms for Analysis and Synthesis of
One-Dimensional Signals Stephane H. Maes

From: Ira D. Smiley, Production Editor.

From: loew@birkhauser.com (Elizabeth Hyman Loew)
Subject: JMSEC 7:4, 1997 TOC
Date: Tue, 7 Oct 1997

J. Mathematical Systems Estimation and Control 1997 Vol. 7, No. 4
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Factorization Theory for Stable, Discrete-Time Inner Functions
P.A. Fuhrmann and J. Hoffmann

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A Unified Representation for Nonlinear Discrete-Time and Sampled
Dynamics S. Monaco and D. Normand-Cyrot

Submitted by Edwin F. Beschler, Birkhauser Boston.

From: Hans Schneider <hans@math.wisc.edu>

Subject: Linear Algebra and Its Applications, Vols 267, 268.

Date: Wed, 8 Oct 1997

Linear Algebra and Its Applications November 1997 Volume 267/01-3
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Multilinear Operators And Weighted L1 Norms M Goldberg

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On The Permanent Of Certain (0,1) Toeplitz Matrices B Codenotti

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Improving The Modified Gauss-Seidel Method For Z-Matrices
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Fernando's solution to Wilkinson's problem: an application of double

factorization Parlett

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Local exponents of primitive digraphs J Shen

On a variable smoothing procedure for Krylov subspace methods
Heyouni, H Sadok

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Rhoades

Applications of Paz's inequality to perturbation bounds for Markov
chains Kirkland, Neumann

Matrix displacement decompositions and applications to Toeplitz linear
systems Di Fiore, P Zellini

Uniformly one-connected matrices and their inverses Lundy, Maybee

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On a new positive extension problem for block Toeplitz matrices
D Alpay

Reduced stability of parameter - dependent matrices J Moro

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Patterns that preserve sparsity in orthogonal factorization
Iwata, P Van Den Driessche

On structure rank of a class of structure matrices MC Zhang

Operator versions of inequalities and equalities on a Hilbert space
CS Lin

| | |
|---------------------------------|---|
| Submitted by Hans Schneider | hans@math.wisc.edu. |
| Department of Mathematics | 608-262-1402 (Work) |
| Van Vleck Hall | 608-271-7252 (Home) |
| 480 Lincoln Drive | 608-263-8891 (Work FAX) |
| University of Wisconsin-Madison | 608-271-8477 (Home FAX) |
| Madison WI 53706 USA | http://math.wisc.edu/~hans (URL) |
| ----- end ----- | |

IPNet Digest Volume 4, Number 11 November 30, 1997

Today's Editors: Patricia K. Lamm and Aaron C. Cinzori
Michigan State University

Today's Topics:

Workshop: British One-Day Workshop on Inverse Problems
Conference: Bayesian Inference for Inverse Problems
Conference: Dynamic System Identification and Inverse Problems
New Book: Gabor Analysis and Algorithms
Survey: Long Precision Arithmetic
Position: Post-doctoral Researchers in Inverse Problems
Position: Tenure Track Position at UMBC
Position: Post-doctoral Researchers in Differential Eqns. (ECMI)
Position: Fellowships at Intelligent System Modeling and Control
Position: Assistantship at University of Graz, Austria
Table of Contents: Inverse Problems
Table of Contents: Surveys on Mathematics for Industry
Table of Contents: Mathematics of Control, Signals, and Systems
Table of Contents: Linear Algebra and Its Applications

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From: Dr Bill Lionheart <wrbllionheart@brookes.ac.uk>
Subject: British one-day workshop
Date: Mon, 10 Nov 1997

The next British One-Day Workshop on Inverse Problems will be on Monday Feb 23rd 1998 at Oxford Brookes University. For further information see our web site

<http://www.brookes.ac.uk/~p0054865/ukipws/ukipws.html>
or contact Dr Bill Lionheart at
wrbllionheart@brookes.ac.uk

From: adjafari@mars.ee.nd.edu (Ali Djafari)
Subject: Conference: "Bayesian inference for inverse problems"
Date: Wed, 19 Nov 97

Dear IPNET readers,

I am organizing a conference "Bayesian inference for inverse problems" in San Diego next summer (SPIE 98, Mathematical Imaging, July 19-24, 1998). You find all the information at:

<http://www.spie.org/web/meetings/calls/sd98/conf/sd99.html>

If possible, please distribute this information to anybody interested.

Thanks.

Ali Mohammad-Djafari
Dept. of Electrical Eng.

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Notre Dame University
Notre Dame, IN 46556, USA

E-mail: Ali.Djafari.1@nd.edu

From: "Dmitry Pieson" <pm@glasnet.ru>
Subject: Conf: Dynamic System Identification & Inverse Problems
Date: Mon, 24 Nov 1997

Dear Colleagues,

Below please find the Call for Papers of the Third International Conference DYNAMIC SYSTEM IDENTIFICATION AND INVERSE PROBLEMS, to be held in Russia, during May 30 - June 5, 1998, and its attachments.

On behalf of Organizing Committee
Sincerely yours
Oleg M. Alifanov, Ph.D., Dr.Sc.
Professor of Mechanical Engineering
Dean of Aerospace College
Moscow Aviation Institute
4 Volokolamskoe Sh.
Moscow, 125871, Russia
Tel: 7(095)1585865, Fax: 7(095)1585126

..

FIRST CALL FOR PAPERS

Third International Conference
DYNAMIC SYSTEM IDENTIFICATION AND INVERSE PROBLEMS

30 May -5 June 1998
Boat cruise Moscow-St.Petersburg, RUSSIA

Organized by:
Russian Scientific Society "Inverse problems in Engineering"
Moscow State Aviation Institute (MAI)
Moscow State University (MGU)
Moscow State Technical University (MGTU)
International Center for Advanced Studies "Cosmos"

Sponsoring Organizations:
Ministry of Education of Russia
Ministry of Science and Technology of Russia
Russian Basic Research Foundation

Objectives:
Following the successful first and second conferences in this series (held in Suzdal, Russia, in 1990, and in St.Petersburg, Russia, in 1994) the aim of this third international conference on Dynamic System Identification and Inverse Problems is to bring together the scientists and engineers involved in inverse problems research and to provide a relaxed atmosphere for in-depth discussion of the types of inverse problems and optimal experiment design problems which occur in engineering practice. The identification problems dealing with unknown boundary and initial conditions, sizes and shapes of domains, physical properties of the media, governing systems of equations, and internal and boundary sources in the multidisciplinary fields involving thermodynamics, heat transfer, fluid mechanics, strength of materials, structural dynamics, electro-magnetics, and nuclear systems are all of

interest and are welcome at this conference. Methods of interest include also efficient and robust numerical techniques (including optimization) that are being applied to cope with a wide variety of identifications problems. The behavior of numerical algorithms for the solution of these extremely conditioned problems and their critical evaluation by comparison with experiments or established benchmarks are highly desired. The conference is of importance to all scientists and engineers who are actively involved in developing innovative theoretical approaches as well as in solving practical industrial problems. The International Scientific Advisory Committee members anticipate that the conference will point out new directions in the identification of mathematical models of dynamic processes.

Conference Themes:

The topics listed below should give only a general guideline for possible contributions. Papers on other topics will also be considered if they fall within the objectives of the conference.

Heat Conduction
Thermal Radiation
Diffusion-Convection
Thermal Processes in Porous Media
Thermal Processes in Composites
Phase Change Processes
Fire and Combustion
Thermal Stability
Vibrations and Structural Dynamics
Acoustics
Electromagnetics
Materials Processing
Elasticity, Thermoelasticity, and Elasto-Plasticity
Tomography and Inverse Scattering
Gas-Liquid Flows
Nuclear Transport
Optimal Experiments Design
Process Design and Optimization
Analysis of Experimental Data, Signal and Noise Processing.

Time Schedule:

As soon as possible --- Return the reply form by FAX or E-mail.
December 10, 1997 --- Submit abstracts (300 words) to the Secretariat by FAX or E-mail.
January 15, 1998 --- Preliminary acceptance notification to authors.
February 15, 1998 --- Submit three copies of the full paper to the Secretariat for review.
April 1, 1998 --- Final acceptance notification to authors.
May 1, 1998 --- Submit final camera-ready version of the full paper for the book of proceedings.

[Note: This news item has been edited for length. You may obtain the full text (including inquiry form, costs, scientific committee, etc.) by visiting the "IPNet Digest Appendices" link off the main IPNet home page

<http://www.mth.msu.edu/ipnet/>

or else by sending an e-mail message to ipnet-request@math.msu.edu with the words

send Russia_Conf_98

in the BODY (not subject) of the message. -Ed.]

From: Thomas Strohmer <strohmer@stat.Stanford.EDU>
Subject: Book: Gabor Analysis and Algorithms

Date: Sat, 29 Nov 1997

Announcement of New Book

GABOR ANALYSIS AND ALGORITHMS
Theory and Applications

Edited by H.G. Feichtinger and T. Strohmer
ISBN 0-8176-3959-4 * 1997 * \$64.95 * Hardcover * 500 pages *
available from Birkaeuser - Boston, <http://www.birkhauser.com>

The field's leading international experts have come together to give a detailed survey of the theory of Gabor analysis, a method of time-frequency analysis and its applications in signal and image processing. This book is a collection of surveys thematically organized, showing the connections and interactions between theory, numerical algorithms, and applications. It gives an overview of the different branches of Gabor analysis, and contains many original results which are published for the first time.

The book provides an introduction to mathematicians and engineers who want to learn about the different approaches and aspects of Gabor analysis or want to apply Gabor-based techniques to tasks in signal and image processing. It is an especially useful reference for research specialists in harmonic analysis, applied mathematics, numerical analysis, engineering, signal and image processing, optics, and pattern recognition.

Contents:

Foreword/Ingrid Daubechies

Introduction/H.G. Feichtinger & T. Strohmer

1. The duality condition for Weyl-Heisenberg frames /A.J.E.M. Janssen
2. Gabor systems and the Balian-Low Theorem/J.J. Benedetto, C. Heil & D.F. Walnut
3. A Banach space of test functions for Gabor analysis/ H.G. Feichtinger & G. Zimmermann
4. Pseudodifferential operators, Gabor frames, and local trigonometric bases/ R. Rochberg & K. Tachizawa
5. Perturbation of frames and applications to Gabor frames/O.Christensen
6. Aspects of Gabor analysis on locally compact abelian groups/ K. Groechenig
7. Quantization of TF lattice-invariant operators on elementary LCA groups/H.G. Feichtinger & W. Kozek
8. Numerical algorithms for discrete Gabor expansions/T.Strohmer
9. Oversampled modulated filter banks/ H. Boelcskei & F. Hlawatsch
10. Adaptation of Weyl-Heisenberg frames to underspread environments/W.Kozek
11. Gabor representation and signal detection/ A. Zeira & B. Friedlander
12. Multi-window Gabor schemes in signal and image representations/Y.Y. Zeevi, M. Zibulski & M. Porat
13. Gabor kernels for affine-invariant object recognition/ J. Ben-Arie & Z. Wang
14. Gabor's signal expansion in optics/M.J. Bastiaans

Extensive Bibliography

Email: fei@tyche.mat.univie.ac.at
strohmer@tyche.mat.univie.ac.at

From: "Larry Widigen" <bignum@cwia.com>
Subject: Long Precision Arithmetic
Date: Wed, 26 Nov 1997

Dear Colleague:

You can help determine whether a microprocessor should be designed to solve one our our most pressing problems regarding precision and accuracy. Precision and accuracy impact algorithm robustness in many areas such as Computational Algebra, Computational Biochemistry, Computational Geometry, etc. Please take a moment to respond to this short survey. Your response will help immensely in determining how critical is the need for hardware support for long precision computation. Your reply will be held in confidence, but the tabulated results of the survey will be sent to you if you indicate so on the survey form. Please reply to bignum@cwia.com as early as possible but not later than January 15, 1998.

Sincerely,

| | |
|-----------------|---------------------|
| Larry Widigen | Chee Yap, Professor |
| bignum@cwia.com | Courant Institute |
| 408-449-9171 | New York University |

[Note: The survey form has been deleted for reasons of length. To obtain a copy of the survey form, visit the "IPNet Digest Appendices" link off the main IPNet home page (see above) or else send an e-mail message to ipnet-request@math.msu.edu with the words
send long_precision_survey
in the BODY (not subject) of the message. -Ed.]

From: Dr Bill Lionheart <wrblionheart@brookes.ac.uk>
Subject: Post-doctoral and post-graduate positions
Date: Mon, 10 Nov 1997

The School of Computing and Mathematical Sciences at Oxford Brookes University, UK has post-doctoral and post-graduate research opportunities for Applied Mathematicians, especially those interested in Inverse Problems.

See our web pages at <http://www.brookes.ac.uk/cms/home.html> or contact Prof MK Pidcock: mkpidcock@brookes.ac.uk.

From: "Dr. Thomas Seidman" <seidman@pc14.math.umbc.edu>
Subject: tenure track position at UMBC
Date: Thu, 30 Oct 1997

The Department of Mathematics and Statistics at the University of Maryland Baltimore County (UMBC) has a tenure-track opening at the assistant professor level in applied mathematics beginning Fall 1998. The candidate should have an earned doctorate in mathematics or a related

field and be able to interact with one or more of the department's existing groups in optimization, numerical analysis, PDEs and systems theory. The applicant should have an active, independent research program and strong potential for obtaining external funding.

The department offers BS, MS and PhD degrees in applied mathematics and statistics. Please refer to the web page <http://www.math.umbc.edu> for more information.

Send resume, a summary of current research, and three letters of reference to: Applied Math Recruiting Committee, Department of Mathematics and Statistics, University of Maryland Baltimore County, Baltimore, MD 21250. The review of the received applications will begin in January 1998. UMBC is an AA/EOE.

From: "PROF.HEINZ W. ENGL" <engl@indmath.uni-linz.ac.at>
Subject: announcement postdoc positions
Date: Sun, 02 Nov 1997

Below, you find the official advertisement for postdoc positions in a TMR network administered by ECMI, the European Consortium for Mathematics in Industry.

Heinz W. Engl
Linz, Austria

ECMI Research Fellowships 1998

TMR Network: Differential Equations in Industry and Commerce

Applications are invited from post-doctoral researchers to participate in the new "Training and Mobility in Research" network entitled "Differential Equations in Industry and Commerce" (DEIC). This network (which is still subject to contract negotiations) is a successor to the HCM network "Mathematics as an Industrial Resource", which, like DEIC, was organized by the European Consortium for Mathematics in Industry (ECMI). Experience with the earlier network has enabled ECMI to target two research areas as being of timely industrial relevance and also offering interesting possibilities for theoretical development. These are

- (1) deterministic differential equations of parabolic or mixed types with applications to glass, steel and polymer manufacture, and to coating industries and
- (2) stochastic differential equations applied to finance, risk, polymeric microstructures and aerospace technology.

DEIC will be supervised by ECMI's research committee and it will link centres at Eindhoven, Kaiserslautern, Linz, Milan, Strathclyde and Oxford. All these centres have expertise in the two strands of the research theme and the principal objective will be to expand this research base by appointing six Research Fellows, one in each centre, starting sometime in 1998 and with a duration of up to 3 years. These fellows will be trained in applied mathematics or numerical analysis but, as with the HCM network, each fellow will be expected to spend much

time collaborating directly with industry and with other centres, as well as pursuing his/her own research. Hence preference will be given to applicants who have an aptitude for finding industrial and commercial problems that are susceptible to innovative mathematics in either research strand and who will help to build up the cache of researchers working in this style in Europe.

The Research Fellowships are open to Nationals of a Member State or Associated State of the European Union who have the equivalent of a doctoral degree in mathematical science and will be under the age of 35 at the time of appointment. The fellowships may NOT be held in the country of which the fellow has nationality. Salary is in local currency on the appropriate local scale and social security, working facilities and travel allowances will be the responsibility of the host centre, following EC guidelines and approval by the network.

Further details and an application form may be obtained from

Adrienne Hart-Davis
Mathematical Institute
24-29 St Giles'
Oxford OX1 3LB
UK
email ociam@maths.ox.ac.uk

or from the World Wide Web <http://www.maths.ox.ac.uk/ociam>

Closing date December 7th 1997

From: Bart Motmans <Bart.Motmans@esat.kuleuven.ac.be>
Subject: Marie Curie Fellows
Date: Thu, 13 Nov 1997

Looking for Marie Curie Fellows

ISMC nv, Intelligent System Modeling and Control, a spin off company of K.U. Leuven - Dept. of Electrical Engineering (ESAT)-SISTA, (see <http://www.ismc.be>) is looking for Marie Curie fellows (under the EC-TMR programme).

Some information about the grants in general (for details : <http://www.cordis.lu/tmr/src/grants1.htm>) :

The purpose of the grant is to enable researchers to acquire fresh knowledge in a new field or a deeper knowledge and a wider competence in their own scientific area. There are 4 categories of grants: two for training (postgraduate and postdoctoral), grants for established researchers and return grants. We're looking for grant holders in the training categories. The age limit is 35 years (with allowance for military service and child care), and the duration is between 6 and max. 24 (postdoctoral) or 36 (postgraduate) months. Qualifications : university (or equivalent) degree, allowing holder to embark directly on a PhD (or equivalent) for postgraduate, a PhD (or equivalent) or 4 years' full-time research at post-graduate level for the postdoctoral grant.

The proposal form has to be completed by the grantholder, with parts to be

filled out by the host institution.

The deadline is 15/12/97.

If you're interested, don't hesitate (because to the deadline is quite close!) to contact

Bart Motmans
Research and Project Coordinator
K.U.Leuven - Dept. of Electrical Engineering (ESAT)
Research Group SISTA
Kard. Mercierlaan 94
B-3001 Leuven, Belgium
Tel. +32-(0)16-32 18 04
Fax +32-(0)16-32 19 70
bart.motmans@esat.kuleuven.ac.be
<http://www.esat.kuleuven.ac.be/sista/>

[Note: The message has been edited for reasons of length. To obtain a copy of the original message, visit the "IPNet Digest Appendices" link off the main IPNet home page (see above) or else send an e-mail message to ipnet-request@math.msu.edu with the words
send Marie_Curie_Fellows
in the BODY (not subject) of the message. -Ed.]

From: "Dr.Kunisch" <kunisch@kfunigraz.ac.at>
Subject: Open position
Date: Wed, 26 Nov 1997

ANNOUNCEMENT FOR HALF-TIME ASSISTENTSHIP POSITION
IN APPLIED MATHEMTICS AT THE INSTITUTE OF MATHEMATICS
AT THE UNIVERSITY OF GRAZ, AUSTRIA.

At the Institute of Mathematics of the University of Graz, Austria, a half-time assistentship (Vertragsassistent) position can be filled, presumably by January 1, 1998.

The applicant must have a degree in mathematics. She or he should have experience in numerical mathematics, partial differential equations, the UNIX and DOS operating systems. Applications should be sent to

Dekant der Naturwissenschaftlichen Fakultat
Karl-Franzens Universitaet Graz
Universitaetsplatz 3
A-8010 Graz, Austria.

The deadline for applications is December 24, 1997. Applicants should be citizens of an EU-member state.

It is planned that the research activities of the successful candidate are integrated into the

"Spezialforschungsbereich Optimierung und Kontrolle",

a research block grant that combines applied mathematicians and practitioners. Additional financial support through the Spezialforschungsbereich may be possible and will depend on the level of

A Witten, I J Won and S J Norton

A method with error estimates for band-limited signal extrapolation
from inaccurate data X-G Xia and M Z Nashed

INVERSE PROBLEMS NEWSLETTER

For further information on Inverse Problems, and all Institute of
Physics Publishing journals and electronic products see
<http://www.iop.org>

Submitted by:
Janet Thomas, Production Editor
Institute of Physics Publishing
Dirac House, Temple Back,
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WWW: <http://www.iop.org>

From: "PROF.HEINZ W. ENGL" <engl@indmath.uni-linz.ac.at>
Subject: Surveys on Mathematics for Industry
Date: Mon, 03 Nov 1997

Surveys on Mathematics for Industry Volume 7 Number 2
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Analysis of coupled heat-mass transport in freezing porous media
F. Talamucci

Numerical parameter estimation in a kinetic model of coal pyrolysis
T. Lohmann

Submitted by:
Prof.Dr.Heinz W. Engl E-Mail: engl@indmath.uni-linz.ac.at
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Altenbergerstrasse 69 secretary: ext.9220; as Dean: ext.3220
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Oesterreich / Austria home phone: +43-(0)732-245518
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From: Secretary Support - Magriijn <magriijn.secsup@tip.nl>
Subject: Journal MCSS
Date: Fri, 14 Nov 1997

Mathematics of Control, Signals, and Systems 1997 Vol. 10, No. 2
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Limits of generalized state space systems under proportional and
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R.K. Prasanth and M.A. Rotea

Universal controllers for robust control problems S. Battillotti

INFORMATION

Information on MCSS including tables of contents is
available at its home pages:

- - - <http://www.cwi.nl/~schuppen/mcss/mcss.html>
- - - <http://www.math.rutgers.edu/~sontag/mcss.html>

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Bradley Dickinson, Eduardo Sontag, Jan van Schuppen (Editors)

Contributed by Jan H. van Schuppen (J.H.van.Schuppen@cwi.nl)

From: Hans Schneider <hans@math.wisc.edu>
Subject: Linear Algebra and Its Applications, Vols 269, 270, 271
Date: Thu, 6 Nov 1997

Linear Algebra and Its Applications November 1997 Vol. 269/01-3
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groups inducing cone orderings M Niezgod

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Matrix Analysis and the Friedrichs Operator of a Quadrature Domain
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An extension of generalized Pascal Matrix and its algebraic properties
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Involutions for Matrices and Generalized Inverses Ladislav Skula

Generalized Eigenvalues of a Definite Hermitian Matrix Pair
Chi Kwong Li

Orthogonal bases that lead to symmetric nonnegative matrices
L Elsner

Submitted by:

Hans Schneider hans@math.wisc.edu.
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480 Lincoln Drive 608-263-8891 (Work FAX)
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----- end -----

IPNet Digest Volume 4, Number 12 December 29, 1997

Today's Editors: Patricia K. Lamm and Thomas L. Scofield
Michigan State University

Today's Topics:

Call for Papers: Multidisciplinary Inverse Problems Session
Call for Papers: Special Symposium on Inverse Analyses
Call for Papers: Special Issue on Linear Systems and Control
Table of Contents: SIAM J. Mathematical Analysis
Table of Contents: SIAM J. Control and Optimization
Table of Contents: SIAM J. Scientific Computing
Table of Contents: Linear Algebra and Its Applications
Table of Contents: Advances in Computational Mathematics
Table of Contents: Numerical Algorithms

Submissions for IPNet Digest:

Mail to ipnet-digest@math.msu.edu

Information about IPNet:

Mail to ipnet-request@math.msu.edu
<http://www.mth.msu.edu/ipnet>

From: "George S. Dulikravich" <ft7@email.psu.edu>
Subject: Call for Papers
Date: Sun, 07 Dec 1997

CALL FOR PAPERS

MULTIDISCIPLINARY INVERSE PROBLEMS AND OPTIMIZATION IN HEAT TRANSFER

1998 International Mechanical Engineering Congress and Exhibition
Anaheim, California, November 15-20, 1998

The K-20 Committee on Computational Heat Transfer and the K-12 Committee on Aerospace Heat Transfer of the Heat Transfer Division of ASME are inviting prospective authors to submit abstracts for the stand-up sessions on "Multidisciplinary Inverse Problems and Optimization in Heat Transfer.

Appropriate topics include, but are not limited to, the following:

- inverse conjugate thermal problems involving multiple heat transfer modes;
- inverse conjugate thermal problems involving electromagnetics and/or acoustics;
- inverse conjugate thermal problems involving phase change and/or combustion;
- inverse shape design for over-specified thermal boundary conditions;
- inverse determination of unknown thermal boundary and initial conditions;
- inverse determination of thermal properties;
- inverse determination of locations and/or intensities of heat sources/sinks;
- optimization of 2-D and 3-D cooling passage shapes, sizes and locations;
- optimization of thermal coating thickness distributions;
- optimization of unsteady quenching and freezing/thawing protocols;
- multi-disciplinary design optimization with heat transfer

constraints.

The prospective authors should submit one (1) copy of an extended abstract of not less than 500 words to Technical Program Chair:

Dr. Ralph A. Nelson

Los Alamos National Laboratory, Mail Stop K575

Los Alamos, NM 87545

phone: (505) 667-8742 FAX: (505) 665-0897 e-mail: ran@lanl.gov

Simultaneously, send three (3) copies of the extended abstract to one of the following four session organizers:

SESSION ORGANIZERS

Prof. George S. Dulikravich
Dept. of Aero. Eng., 233 Hammond
The Pennsylvania State University
University Park, PA 16802, U.S.A.
phone: (814) 863-0134
FAX: (814) 865-7092
e-mail: FT7@PSU.EDU

Prof. Keith A. Woodbury
Dept. of Mechanical Eng.
The University of Alabama
Tuscaloosa, AL 35487, U.S.A.
phone: (205) 348-1647
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Prof. Cristina Amon
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Carnegie Mellon Univ.
Pittsburgh, PA 15213-3890
phone: (412) 268-3651
FAX: (412) 268-3348
e-mail: camon@cmu.edu

Abstracts and eventually complete papers will be peer reviewed. Accepted full papers will be published in a bound volume available at the meeting. Additional information from:

<http://www.netcom.com/~deeppow/98IMECE.html>

DEADLINES

| | |
|---|-------------------|
| Mail three copies of your abstract by | 25 January, 1998 |
| Notification about acceptance of your abstract by | 10 February, 1998 |
| Submit your complete manuscript (4 copies) by | 20 March, 1998 |
| Notification of final acceptance by | 25 May, 1998 |
| Final papers on mats to session organizers by | 6 July, 1998 |

Submitted by:

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Publish in internat. journal on INVERSE PROBLEMS IN ENGINEERING!

<http://www.gbhap.com/journals/210/210-top.htm>

<http://homer.shinshu-u.ac.jp/ISIP98>

From: Shiro KUBO <kubo@mech.eng.osaka-u.ac.jp>

Subject: ICES98, O.S. "Inverse Analyses"

Date: Wed, 24 Dec 1997

CALL FOR PAPERS

Special Symposium on "Inverse Analyses"
at ICES'98, Atlanta, Georgia, USA

The ICES'98, International Conference on Computational Engineering and Sciences, will take place during 6-9 October, 1998 in Atlanta, Georgia, USA to celebrate its 10th anniversary. During the Conference, a special symposium, "Inverse Analyses", will be organized and may expect the papers from academic institutions and industrial research laboratories. Scientists and engineers interested in various inverse analyses are all welcomed to participate in this organized symposium.

* IMPORTANT INFORMATION ABOUT SYMPOSIUM *

LOCATION: Atlanta, Georgia, USA

DURATION: October 6-9, 1998 (in conjunction with the ICES '98)

PAPER TITLE and AUTHORS (due by January 5, 1998) Including Address, Phone & Fax Numbers and E-mail Address.

ABSTRACT: One Page (due by January 9, 1998) Including Address, Phone & Fax Numbers and E-mail Address. Please submit an Abstract to ether

the Symposium Organizers (listed blow) or to the ICES'98 Organization office. Submission of the abstract can be ether by Postage, Fax or E-mail.

FULL PAPER: Six-page (due by April 1, 1998)

REGISTRATION: US \$500.00 (by August 1, 1998)

* FEE: (includes one copy of the proceedings + cost of the social events + one year subscription to the journal Computer Modeling and Simulation in Engineering)

ADDRESS: (Symposium Organizer)

Shiro Kubo

Professor

Department of Mechanical Engineering and Systems

Graduate School of Engineering, Osaka University

2-1, Yamadaoka, Suita, Osaka 565 \$B!] (J0871 Japan (J

Phone: +81-6-879-7304, Facsimile: +81-6-879-7305

e-mail: kubo@mech.eng.osaka-u.ac.jp (1997 March-)

ICES'98 Scientific Committee

Computational Mechanics Center

Georgia Institute of Technology

237 Uncle Heinie Way, Room 225 French Buildin

Atlanta, Georgia 30332-0356, USA

Tel: (404)-894-2758 Fax: (404)-894-2299

<http://cm.gatech.edu/ices98>

E-mail: ices98@cm.gatech.edu

Please consult ICES'98 web site for detailed conference information.

From: Hans Schneider <hans@math.wisc.edu>

Subject: LAA Special Issue

Date: Wed, 3 Dec 1997

LINEAR ALGEBRA AND ITS APPLICATIONS

CALL FOR PAPERS: Special Issue on Linear Systems and Control.

Over the last 15 years, LAA has published three special issues devoted to Linear Systems and Control. These issues that came out as vol. 50 (1983), vols. 122-124 (1989) and vols. 203-206 (1994) were among the best issues of this journal in terms both of scope and quality. They are evidence of the vitality of the field of systems and control, of the breadths and depth of the mathematical techniques employed and developed. Each of these special issues provided a cross section of the current interests in our field. We believe that these issues also had some beneficial effect in attracting younger people to the field.

The closing of the second millenium and the beginning of the third is a natural point to stop for a summing up on one hand and charting the future course on the other. What we are proposing for this occasion is a different kind of special issue.

We do not aim at a large publication, but want to achieve distinction through a high quality collaborative effort. We aspire to a volume that makes a strong positive statement about systems and control and archives some of the major contributions of the last decades. It is our expectation that these goals can be best achieved by collaborations and we intend to do whatever we can to encourage the development of papers that are co-authored by people who would represent different points of view on the same subject. In the best case the contributions will be fairly homogeneous with respect to mathematical level and length. What we are after are topics that seem to have adequate scope and depth. A preliminary list of possible topics would include:

- Schubert Calculus as a problem in matrix calculus
- Matrices depending on parameters and their algebraic geometry
- Factorization theory of matrix functions
- Behaviours and geometric control theory
- Module theoretic techniques in system theory
- Interpolation theory on loop groups.
- Geometry of rational function spaces, matrix flows
- Systems over finite fields, coding theory
- Realization theory for structured matrices
- Analysis of zeros and connection to geometric control
- New computational techniques in control

Of course additional topics can be considered as well. If questions arise as to the suitability of a paper for the special issue in terms of topic, scope or method, it is advisable that the author(s) communicate directly with of the special issue editors. At the present time there is a definite possibility that this could be the first issue of the year 2000 for LAA. What better way to start the new millenium?

To make this target date possible, the submission deadline has been set for 30 September, 1998. Papers should be submitted to one of the special issue editors listed below:

Prof. A.C. Antoulas
Department of Electrical Engineering
Rice University
Houston, Texas 77251, U.S.A.
E-mail: aca@rice.edu

Prof. R.W. Brockett
Div. of Engineering and Applied Physics

Exponentially Growing Solutions for Nonsmooth First-Order
Perturbations of the Laplacian Carlos F. Tolmasky

Local Average Liapunov Functions and Persistence in Population
Dynamics W. H. Ruan

Exponential Stability of a Thermoelastic System with Free Boundary
Conditions Without Mechanical Dissipation
George Avalos and Irena Lasiecka

Stability of N-Fronts Bifurcating from a Twisted Heteroclinic Loop and
an Application to the FitzHugh-Nagumo Equation Bjorn Sandstede

Monotonicity of Phaselocked Solutions in Chains and Arrays of
Nearest-Neighbor Coupled Oscillators Liwei Ren and Bard Ermentrout

Refinable Function Vectors Zuowei Shen

Orthogonality of Sieved Random Walk Polynomials from a Nonsieved
Analogue Blaise DeSesa

Frames Containing a Riesz Basis and Preservation of This Property
Under Perturbations Peter G. Casazza and Ole Christensen

Harmonious Extensions E. Le Gruyer and J. C. Archer

Submitted by: Deborah Poulson, Production Editor

From: smiley@siam.org
Subject: Contents, SIAM Journal on Control and Optimization
Date: Thu, 18 Dec 97

SIAM Journal on Control and Optimization January 1998 Vol. 36, No. 1
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Estimates of Convergence of Fully Discrete Schemes for the Isaacs
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A Generic Classification of Time-Optimal Planar Stabilizing Feedbacks
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Model Reference Adaptive Control of Distributed Parameter Systems
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An Approximation Theory of Solutions to Operator Riccati Equations
for $H=A5$ Control Kazufumi Ito and K. A. Morris

Convergence Rate of Stochastic Approximation Algorithms in the
Degenerate Case Han-Fu Chen

The Value Function of the Singular Quadratic Regulator Problem with
Distributed Control Action Francesca Bucci and Luciano Pandolfi

Minimal (Max, +) Realization of Convex Sequences
Stephane Gaubert, Peter Butkovic, and Raymond Cuninghame-Green

Stabilization of Elastic Plates with Dynamical Boundary Control
Bopeng Rao

Configuration Flatness of Lagrangian Systems Underactuated by One Control Muruhan Rathinam and Richard M. Murray

Partial Disturbance Rejection with Internal Stability and H^{∞} Norm Bound

Vasfi Eldem, Hitay D6zbay, Hasan Selbuz, and Kadri D6z=E7aldiran

Bifurcation and Normal Form of Nonlinear Control Systems, Part I
Wei Kang

Bifurcation and Normal Form of Nonlinear Control Systems, Part II
Wei Kang

Optimal Residence Time Control of Hamiltonian Systems Perturbed by White Noise James P. Duniak and Mark I. Freidlin

Output Dead Beat Control for a Class of Planar Polynomial Systems
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Optimal Control of Problems Governed by Abstract Elliptic Variational Inequalities with State Constraints Ma=Eftine Bergounioux

On the Attainable Set for Scalar Nonlinear Conservation Laws with Boundary Control Fabio Ancona and Andrea Marson

Infinite Linear Programming and Multichain Markov Control Processes in Uncountable Spaces

Onesimo Hernandez-Lerma and Juan Gonzalez-Hernandez

Spectral Approach to Duality in Nonconvex Global Optimization
Alexey S. Matveev

Generic Pole Assignment via Dynamic Feedback Susumu Ariki

Submitted by: Ira D. Smiley, Production Editor.

From: thomas@siam.org

Subject: Contents, SIAM Journal on Scientific Computing

Date: Wed, 10 Dec 97

SIAM Journal on Scientific Computing January 1998 Vol.19, No. 1
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Special Issue on Iterative Methods
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Using Nonorthogonal Lanczos Vectors in the Computation of Matrix Functions V. Druskin, A. Greenbaum, and L. Knizhnerman

QMR Smoothing for Lanczos-Type Product Methods Based on Three-Term

Recurrences Klaus J. Ressel and Martin H. Gutknecht

Some Multigrid Algorithms for Elliptic Problems on Data Parallel
Machines V. A. Bandy, J. E. Dendy, Jr., and W. H. Spangenberg

An Evaluation of Parallel Multigrid as a Solver and a Preconditioner
for Singularly Perturbed Problems C. W. Oosterlee and T. Washio

Fast Multigrid Solution of the Advection Problem with Closed
Characteristics Irad Yavneh, Cornelis H. Venner, and Achi Brandt

An Efficient Solver for Multi-Right-Hand-Side Linear Systems Based on
the CCCG(eta) Method with Applications to Implicit Time-Dependent
Partial Differential Equations
Frederico F. Campos and Nick R. C. Birkett

Superlinear Convergence Estimates for a Conjugate Gradient Method for
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