IPNet Digest  Volume 22,  Number 09  October 31, 2015

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

Today's Topics:
Symposium: Inverse Problems Symposium 2016
Conference: SIAM Conference on Imaging Science
Tenure Track Position: Applied PDEs and Inverse Problems
Postdoctoral Positions: Computational Exploration Seismology
Postdoctoral Position: Quantitative Image Reconstruction Techniques
PhD Position: Time-Space Multiscale Separation of Ocean Tide Generated Magnetic Signals
New book: Data Assimilation, A Mathematical Introduction
Table of Contents: Inverse Problems
Table of Contents: Journal of Inverse and Ill-posed Problems
Table of Contents: Inverse Problems and Imaging

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

Information about IPNet:
http://janus.math.msu.edu/ipnet/

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From: "McMasters,  Robert L" <mcmastersrl@vmi.edu>
Subject: Inverse Problems Symposium 2016
Date: October 2, 2015

This is the 29th in the series of National and International meetings on Inverse Problems that were initiated at Michigan State University in 1988.  Papers are solicited from all areas involving inverse methods and their applications.  The symposium is organized in a single session format to foster cross-disciplinary interaction.  Solicited topics include:

A. Mathematical and Statistical Aspects of Inverse Problems
    1. Theory and Methods of Inverse Problems
    2. Stability and Error Analysis
B. Design of Experiments
    1. Optimal Design of Experiments
    2. Analysis of Actual Experimental Data
C. Applications
    1. Heat Transfer, Applied Mechanics, Controls, Other Engineering Disciplines
    2. Biology, Biochemistry, Genetics, and Medicine
    3. Nondestructive Evaluation
    4. Nanoengineering
    5. Tomography and Inverse Scattering
    6. Geology and Environmental Phenomena
    7. Economics

8. Food and Bioprocessing
9. Bioengineering
10. Packaging

Contact Information:

Honorary Chairman: Dr. James V. Beck, Professor Emeritus, Michigan State University
beck@msu.edu.

Conference Chairman: Robert McMasters, Professor
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Virginia Military Institute
Lexington, Virginia 24450
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mcmastersrl@vmi.edu

Conference Co-Chairman: Kirk Dolan, Associate Professor
Department of Food Science & Human Nutrition
Department of Biosystems & Agricultural Engineering
Michigan State University
East Lansing, MI 48224
Phone: (517) 353-3333
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Important dates:

Abstract submission opens: 15 January 2016
Abstract submission closes: 30 March 2016
Abstract acceptance notification: 15 April 2016
Early registration ends at midnight: 1 May 2016

Submitted by:
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From: "Frank W. Kunkle" <Kunkle@siam.org>
Subject: SIAM Conference on Imaging Science (IS16) - MINISYMPOSIA DEADLINE EXTENDED!
Date: October 16, 2015

SIAM Conference on Imaging Science - Call for Participation
Location: Albuquerque, New Mexico, USA
Dates: May 23-26, 2015

The Call for Participation for this conference is now available. For more information, please visit

http://www.siam.org/meetings/is16/?utm_source=link&utm_medium=IS_SIAG&utm_campaign=CCIS16_Deadline_extension

This conference is being held in cooperation with the American Statistical Association (ASA) Statistic in Imaging Section (http://www.amstat.org/sections/sectionlist.cfm#imaging)

Important deadlines:
Nov. 9: Minisymposium proposals due
Nov. 13: SIAM Student Travel Award and Post-doc/Early Career Travel Award Applications due
Nov. 23: Contributed lecture, poster and minisymposium presentation abstracts due
Apr. 25: Pre-registration AND hotel reservation deadline

Confirmed plenary speakers:
Uwe Albertin, Chevron Energy Technology Company, USA
Donald Geman, Johns Hopkins University, USA
Peyman Milanfar, Google, USA
Thomas Strohmer, University of California, Davis, USA

Confirmed minitutorial speakers:
C. Alex Young, NASA Goddard Space Flight Center, USA
Lorenzo Rosasco, Istituto Italiano di Tecnologia, Italy
Gitta Kutyniok, Technical University of Berlin

Contact SIAM Conference Department at meetings@siam.org with any questions about the conference.

We hope to see in in Albuquerque next year!

Rebecca Willett and Stefano Soatto, IS16 Co-Chairs

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From: "Klibanov, MIkhail" <mklibanv@uncc.edu>
Subject: tenure track position in applied PDEs and inverse problems
Date: October 3, 2015

Department of Mathematics of the University of North Carolina at Charlotte has announced a tenure track assistant professor position in Applied Mathematics, more specifically applied partial differential equations with a preference in inverse problems. All interested people are welcomed to apply. Below is the text of the full announcement, which can be found at http://math.uncc.edu/node/198

Tenure Track Assistant Professor in Applied Mathematics

Applications are invited for a tenure-track assistant professorship in applied mathematics at the University of North Carolina at Charlotte starting August, 2016. Required qualifications are a Ph.D.~degree or equivalent in applied mathematics (more

specifically applied partial differential equations with a preference in inverse problems) or a related field, a commitment to establishing a productive research program, and a commitment to excellence in teaching at the undergraduate and graduate levels.  Preference will also be given to applicants with strong interdisciplinary research experience, potential for external funding and a demonstrated commitment to and experience in teaching a diverse student body.

Applications must be made electronically at https://jobs.uncc.edu (position number 6593) and must include a letter of interest that addresses the requirements for the position, a curriculum vitae, a statement of research plans, a statement of teaching experience, philosophy, and interests, and copies (either official or unofficial) of graduate transcripts. Applicants must also arrange to have three letters of reference on appropriate letterhead stationery forwarded (in PDF format, if submitted electronically) on their behalf to Applied Mathematics Search Committee, Department of Mathematics and Statistics, University of North Carolina at Charlotte, 9201 University City Boulevard, Charlotte, NC 28223, or via email to Ms. Sarah Hornbeck (srhornbe@uncc.edu) with ``Applied PDE Position Reference" in the subject line. Evaluations of applications will commence on November 15, 2015 and will continue until the position is filled. The finalists will be invited for a campus interview and a background check is required before an offer can be made.

The University of North Carolina at Charlotte is a doctoral, research intensive university located in one of the nation's fastest growing metropolitan areas on an expanding, modern campus. One of sixteen campuses in one of the oldest public university systems in the United States, UNC Charlotte offers over 28,000 students a wide range of undergraduate and graduate degree programs. As the largest college at UNC Charlotte, the College of Liberal Arts \& Sciences houses 20 departments in the humanities, social sciences, physical sciences and military sciences, as well as 24 applied research centers and interdisciplinary programs. It offers eight doctoral degrees, 34 master's degrees and graduate certificates and 34 undergraduate degrees. With close to sixty full-time faculty and staff members, over 400 undergraduate majors and a robust Ph.D. program, the Department of Mathematics and Statistics is the largest department in the university. Faculty research interests include such fields as algebra, analysis, computational mathematics, differential equations, mathematical finance, inverse problems, mathematical physics, topology,  statistics, and biostatistics.

As an EOE/AA employer and an ADVANCE Institution that strives to create an academic climate in which the dignity of all individuals is respected and maintained, the University of North Carolina at Charlotte encourages applications from all underrepresented groups.

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From: Felix Herrmann <fherrmann@eos.ubc.ca>
Subject: Postdoctoral Positions Available in Computational Exploration Seismology
Date: October 10, 2015

Postdoctoral Positions Available in Computational Exploration Seismology

The Seismic Laboratory for Imaging and Modelling (SLIM) at the Department of Earth, Ocean, and Atmospheric Sciences, the University of British Columbia, invites applications for postdoctoral fellows in the following areas:

- observational seismology: development of practical data acquisition scenarios, using simulation-based acquisition design, and practical workflows for 3-D full-waveform inversion;
- computational and theoretical seismology: design and implementation of large-scale 3D parallel seismic modelling (time-stepping and time-harmonic) and wave-equation based imaging (reverse-time migration) and inversion (full-waveform inversion and migration velocity analysis) techniques;
- compressive sensing: design and implementation of novel seismic data acquisition, sparse/low-rank optimization algorithms, and directional transforms including curvelets;
- scientific computing & inverse problems: design and implementation of reduced and full-space PDE-constrained optimization and (Bayesian) parameter-estimation techniques designed to make inferences on the physical properties that govern wave propagation from data collected at the surface, and
- optimization, machine learning, and image processing: large-scale convex and stochastic optimization; machine learning techniques, including (positive) matrix factorizations, convolutional deep learning, and the scattering transform; image processing including feature detection and classification.

Who we are
SLIM is one of the leading groups in exploration seismology conducting cutting-edge cross-disciplinary research in seismic data acquisition, processing, imaging, and inversion. We collaborate extensively with industry, through the SINBAD Consortium sponsored by 11 industrial partners, and with other academic institutions through our partnership with the UFRN in Brazil and Imperial College London as part of the International Inversion Initiative. Check our website and mind map for more details and connections between the different components of the research program at SLIM.

Our interdisciplinary approach builds on recent developments in compressive sensing, large-scale optimization, machine learning and full-waveform inversion. The project includes 10 graduate students, several postdocs, and a research associate. The postdoctoral positions will be under supervision of Felix J. Herrmann (Earth, Ocean, and Atmospheric Sciences) and Ozgur Yilmaz (Mathematics) and are available immediately.

The aim of our research is to design the next-generation scalable 3D seismic imaging technology that addresses fundamental issues related to the quality and cost of seismic data acquisition, the ability to invert exceedingly large seismic data volumes, and the capacity to work with real field datasets. You will be part of a dynamic interdisciplinary international research group and you will present your research at international conferences and to industry. You will be involved in industry collaborations that include internships and projects on real field data. You will have extensive contacts with graduate students, your fellow postdocs, and faculty. We seek excellence in any of a wide variety of areas, from theory, algorithm

design, to concrete software implementations to be applied to 3-D field data.

We offer
Aside from being part of an excellent research team, you will have access to major computational resources. At UBC, SLIM owns and operates a 1040-core dedicated HPC cluster with parallel matlab with 300 workers. In Brazil we have 40% exclusive access to Yemoja, a HPC cluster with 17k cores and 4k parallel matlab workers.

Your profile
The ideal candidates are expected to have a solid background in exploration seismology, numerical linear algebra and inverse problems, and should have an overlap in scientific interests with at least two of the above described research areas. In addition, we are looking for candidates with experience in seismic-data processing (e.g. with promax or omega) and/or parallel algorithm development in matlab or equivalent high-level programming languages. Because our program calls for a broad array of activities in Canada, in Brazil and in the UK, candidates may, depending on their background and interests, be involved in research carried out abroad. Because of the industrial involvement there is an expectation that your research will be applied to real 3-D field data sets. Positions are for one year renewable to up to three years.

Successful candidates will have a PhD degree obtained in 2012 or later in geophysics, mathematics, computer science, electrical engineering, or a related field. Earlier PhDs will be considered where the research career has been interrupted by circumstances such as parental responsibilities or illness. UBC hires on the basis of merit, and is committed to employment equity. Positions are open to individuals of any nationality.

How to apply
Applicants are strongly encouraged to apply on-line. Submissions can be made at https://www.mathjobs.org/jobs/UBC/SLIM15/. Applicants should submit

- a CV,
- a complete list of publications, and
- a statement of research.

Applicants should also arrange for three letters of recommendation that should address your research capability.

Screening of applications for appointments beginning in the academic year 2016-17 will commence on November 15, 2015. Applications received after this date will be considered if positions remain open.

For additional information please contact Miranda Joyce. For more information on our research program, see our website or our mind map.

About UBC and Vancouver
The University of British Columbia, established in 1908, educates a student population of 50,000 and holds an international reputation for excellence in advanced research and learning. Our campus is 30 minutes from the heart of downtown Vancouver, a

spectacular campus that is a ‘must-see’ for any visitor to the city – where snow-capped mountains meet ocean, and breathtaking vistas greet you around every corner.

Felix J. Herrmann
Professor, Department of Earth, Ocean, and Atmospheric Sciences
Director of UBC-Seismic Laboratory for Imaging and Modeling (SLIM)
EOS-UBC
2207 MAIN MALL, Vancouver, BC, V6T 1Z4 - Canada
phone: (+1) 604-822-8628
https://www.slim.eos.ubc.ca

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From: David Fuentes <fuentesdt@gmail.com>
Subject: Post-doctoral position in The Department of Imaging Physics at The University of Texas MD Anderson Cancer Center
Date: October 29, 2015

The research focus is the development of quantitative image reconstruction techniques with applications to medical image guided diagnosis and therapy.
Research topics include high dimensional inverse problems with l1-like regularization, statistical analysis, model validation,
and model selection under measurement uncertainty.
The candidate will be expected to work in a highly interdisciplinary research environment with scientists and clinicians throughout MDACC and from partner institutions.  The candidate will have access to department computing resources, the institutional High Performance Computing Center cluster (HPCC), and allocations to Texas Advanced Computing Center (TACC).

Qualifications:
Candidates should be proficient in scientific computing and should have a Ph.D. by the time of appointment in any Engineering discipline or Applied Mathematics/Statistics.

To be considered for this position, please forward a research statement and curriculum vitae to:

David Fuentes, Ph.D.  U.T. M. D. Anderson Cancer Center 1515 Holcombe Blvd., Unit 1902 Houston, TX 77030 E-Mail: dtfuentes@mdanderson.org

M. D. Anderson Cancer Center is an equal opportunity employer and does not discriminate on the basis of race, color, national origin, gender, sexual orientation, age, religion, disability or veteran status except where such distinction is required by law. All positions at The University of Texas M. D. Anderson Cancer Center are security sensitive and subject to examination of criminal history record information. M. D. Anderson Cancer Center is a smoke-free and drug-free environment.

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From: Christian Gerhards <christian.gerhards@univie.ac.at>
Subject: PhD Position, Geomathematics, University of Vienna
Date: October 11, 2015

Within the DFG-funded project ''Time-Space Multiscale Separation of Ocean Tide Generated Magnetic Signals'', we offer a PhD Position (3 years) at the Computational Science Center at the University of Vienna.

The project focuses on the development and application of mathematical tools for the extraction of the Earth's magnetic field signal that is produced by (tidal) ocean currents and related inverse problems. In particular, the goal is to construct spherical basis functions related to the induction equation that reflect certain spatial properties and which should also be implemented and applied to magnetic field satellite data. Depending on the preferences of the candidate, the emphasis can be on the more theoretical or the more applied aspects of the problem.

The project is part of DFG's priority program ''Study of Earth system dynamics with a constellation of potential field missions (DynamicEarth)''. Further information on the project can be found on the website of the Computational Science Center: www.csc.univie.ac.at/index.php?page=ocean_tides.

The position is limited to 3 years and payment is according to the collective bargaining agreement for Austrian university employees (level B1, 75%).

Required Qualifications:
Candidates have a MSc degree (or equivalent) in Mathematics, Physics, or a closely related field and have an interest in interdisciplinary mathematics and geosciences. They are open minded, active, and have a good command of the English and/or German language.

Applications (including letter of motivation, curriculum vitae, copies of academic certificates, and a letter of recommendation) and inquiries on the position should be send to: christian.gerhards@univie.ac.at.

The vacancy will be closed whenever a qualified candidate has been found.

Submitted by: Dr. Christian Gerhards
Computational Science Center, University of Vienna
Oskar Morgenstern-Platz 1, Room 07.132
1090 Vienna, Austria
E-Mail: christian.gerhards@univie.ac.at Phone: +43 1 4277 23717

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From: "Kody J.H. Law" <kodylaw@gmail.com>
Subject: New book: Data Assimilation, A Mathematical Introduction
Date: October 1, 2015

We are pleased to announce the new book

Title: Data Assimilation, A Mathematical Introduction.
Authors: Law, Kody, and Stuart, Andrew, and Zygalakis, Konstantinos
Publisher: Springer Texts in Applied Mathematics

http://www.springer.com/us/book/9783319203249

Springer has generously allowed us to post the first half of the book on the arxiv, here

http://arxiv.org/abs/1506.07825

The matlab code which produced the images in the book provides simple examples of the fundamental algorithms. That code is available at the following link, and each program is executable within seconds

http://tiny.cc/damat

Submitted by: Kody J.H. Law, Computational Applied Mathematics Group,
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From: <noreply@iopscience.org>
Subject: Inverse Problems, Volume 31, Number 9, September 2015
Date: August 28, 2015

Inverse Problems September 2015 Volume 31, Number 9
Table of Contents

tomography
Bastian Harrach, Eunjung Lee, and Marcel Ullrich

The MUSIC algorithm for impedance tomography of small inclusions from discrete data
A Lechleiter

A one-step reconstruction algorithm for quantitative photoacoustic imaging
Tian Ding, Kui Ren, and Sarah Vallélian

Inverse diffraction for the Atmospheric Imaging Assembly in the Solar Dynamics Observatory
G Torre, R A Schwartz, F Benvenuto, A M Massone, and M Piana

Source identification problems for the wave equation on graphs
Sergei Avdonin, and Serge Nicaise

New convergence results for the scaled gradient projection method
S Bonettini, and M Prato

Inverse Born series for the radiative transport equation
Manabu Machida, and John C Schotland

Erratum: A nonlinear approach to difference imaging in EIT; assessment of the robustness in the presence of modelling errors (2015 Inverse Problems 31 035012)
Dong Liu, Ville Kolehmainen, Samuli Siltanen, and Aku Seppänen



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From: <noreply@degruyter.com>
Subject: TOC 'Journal of Inverse and Ill-posed Problems'
Date: October 2, 2015

Journal of Inverse and Ill-posed Problems October 2015 Volume 23, Issue 5

Table of Contents

Multilevel Jacobi and Gauss–Seidel type iteration methods for solving ill-posed integral equations
Luo, Xingjun / Hu, Wenyu / Xiong, Lingjuan / Li, Fanchun

Estimation of distributed parameters in permittivity models of composite dielectric materials using reflectance
Banks, H. Thomas / Catenacci, Jared / Hu, Shuhua

Asymptotic method for finding the coefficient of hydraulic resistance in lifting of fluid on tubing
Aliev, Fikret A. / Ismailov, Nevazi A. / Namazov, Atif A.

Identification of biological models described by systems of nonlinear differential equations
Kabanikhin, Sergey I. / Krivorotko, Olga I.

Statistical inversion in electrical impedance tomography using mixed total variation and non-convex ℓp regularization prior
Strauss, Thilo / Khan, Taufiquar

Reconstruction of a convolution operator from the right-hand side on the semiaxis
Voronin, Anatoly F.

International workshop “Inverse Problems and Integral Geometry” Immanuel Kant Baltic Federal University, Kaliningrad, Russia October 13–16, 2014
Pestov, Leonid

http://www.degruyter.com/view/j/jiip.2015.23.issue-5/issue-files/jiip.2015.23.issue-5.xml

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From: Susan Cummins <newsletter@aimsciences.org>
Subject: New IPI vol. 9, no. 4 2015 November issue is now available online
Date: October 16, 2015

Inverse Problems and Imaging November 2015 Volume 9, Number 4
Table of Contents

Boundary and scattering rigidity problems in the presence of a magnetic field and a potential
Yernat M. Assylbekov and Hanming Zhou

The inverse electromagnetic scattering problem by a mixed impedance screen in chiral media
Christodoulos E. Athanasiadis, Vassilios Sevroglou and Konstantinos I. Skourogiannis

Application of mixed formulations of quasi-reversibility to solve ill-posed problems

for heat and wave equations: The 1D case
Eliane Bécache, Laurent Bourgeois, Lucas Franceschini and Jérémi Dardé

Stabilized BFGS approximate Kalman filter
Alexander Bibov, Heikki Haario and Antti Solonen

Homogenization of the transmission eigenvalue problem for periodic media and application to the inverse problem
Fioralba Cakoni, Houssem Haddar and Isaac Harris

A new Kohn-Vogelius type formulation for inverse source problems
Xiaoliang Cheng, Rongfang Gong and Weimin Han

A parallel space-time domain decomposition method for unsteady source inversion problems
Xiaomao Deng, Xiao-Chuan Cai and Jun Zou

Locally sparse reconstruction using the l1,∞-norm
Pia Heins, Michael Moeller and Martin Burger

Bilevel optimization for calibrating point spread functions in blind deconvolution
Michael Hintermüller and Tao Wu

Iterative choice of the optimal regularization parameter in TV image restoration
Alina Toma, Bruno Sixou and Françoise Peyrin

Submitted by: Susan Cummins, Publication Editor
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