IPNet Digest Volume 27, Number 08 July 19, 2020 Today's Editor: Patricia (Patti) K. Lamm, Michigan State University Today's Topics: Registration Online: Chemnitz Symposium on Inverse Problems @ DMV Research Fellowship: Image Reconstruction for Next Generation X-Ray Tomography, UCL Postdoc Positions: Focus Includes Inverse Problems, UC Boulder Updated Website: Automatic-Regularizing Solvers for Linear Matrix Equations Table of Contents: Inverse Problems Table of Contents: Inverse Problems in Science and Engineering Submissions for IPNet Digest: Mail to ipnet-digest@math.msu.edu Information about IPNet: http://ipnet.math.msu.edu From: Jan-F. Pietschmann <jfpietschmann@math.tu-chemnitz.de> Subject: Chemnitz Symposium @ DMV - Now online Date: July 19, 2020 Dear all, this is a brief update on this year's Chemnitz Symposium on Inverse Problems, taking place as part the the annual DMV-Meeting. As some of you may already know, the DMV-Meeting will take place online and so will our symposium. I am writing you since finally the DMV registration page is online https://nam02.safelinks.protection.outlook.com/?url=https%3A%2F%2Furldefense.com%2Fv3

%2F__https%3A%2F%2Fwww.tu-chemnitz.de%2Fmathematik%2Fdmv2020%2Fregistration.php__%3B!! HXCxUKc!iz5d8XZQOnXJTm1_cBReClWoqyYGEgNOYgwD4Zmdi5KmaRFrcQlvP2qm1ad4As6e%24&data=01% 7C01%7Clamm%40msu.edu%7C836f2c65bda54dae549e08d81904babc% 7C22177130642f41d9921174237ad5687d%7C0&sdata=wkVf%2Bd% 2FYxWiQAIhY1WnIOIOyqyz8bMjkMf1J9spyCv4%3D&reserved=0

The DMV still asks for a (reduced) fee to cover costs for Zoom-Licences, technical assistance, etc.

Please make sure to select "Chemnitz Symposium" at the very first step if you want to register.

Despite the fact that online-meetings lack many positive aspects of real meetings, under the given circumstances this still seems the best solution. Therefore, we are happy if many of you decide to participate in this format and hope to see many of you in person soon again.

Best regards, Barbara, Andrew and Jan

Submitted by:

Prof. Dr. Jan-Frederik Pietschmann
Faculty of Mathematics
TU Chemnitz, 09107 Chemnitz, Germany
email jfpietschmann@math.tu-chemnitz.de
phone +49 371 531 36901
-----From: Simon Arridge <S.Arridge@cs.ucl.ac.uk>
Date: Saturday, July 4, 2020
Subject: Research Fellow in Image Reconstruction for Next Generation X-Ray Tomography
Research Fellow in Image Reconstruction for Next Generation X-Ray Tomography, Ref:1868021

UCL Department / Division: Computer Science Location of position: London Grade: 7 Hours: Full Time Salary (inclusive of London allowance): £35,965 - £40,062 per annum

Duties and Responsibilities:

A multidisciplinary consortium from UCL comprising the Advanced X-Ray Imaging group in the Department of Medical Physics and Biomedical Engineering, the Photonic Innovations Lab in the Department of Electronic and Electrical Engineering, and the Centre for Inverse Problems in Computer Science has received strategic funding from UKRI (Nikon-UCL Prosperity Partnership on Next-Generation X-Ray Imaging) to support a partnership tasked with developing disruptive approaches to the use of x-rays in science, industry, medicine and security.

The research fellow will develop innovative reconstruction algorithms involving phase retrieval, compressed sensing, deep learning, and large scale optimisation. The project will involve detailed mathematical and computation development and the successful applicant will work closely with the experimental teams to ensure that translation to real applications will be realised.

The duration of the post is 01 October 2020 to 31 May 2022 in the first instance.

Key Requirements:

Applicants must hold, or be about to receive, a PhD in computer science, mathematics, physics, or a closely related field in engineering sciences. Good programming skills in a high-level language e.g. C, C++, Python. Interest in imaging science, inverse problems and machine learning.

Appointment at Grade 7 is dependent upon having been awarded a PhD; if this is not the case, initial appointment will be at Research Assistant Grade 6B (salary £31,479 - £33,194 per annum) with payment at Grade 7 being backdated to the date of final submission of the PhD thesis.

Further Details:

A job description and person specification together with links for making an application can be accessed at

https://atsv7.wcn.co.uk/search_engine/jobs.cgi?owner=5041404&ownertype=fair&jcode= 1868021&vt_template=965&adminview=1

For an informal discussion about this position, please contact Prof Simon Arridge at S.Arridge@cs.ucl.ac.uk

From: Alireza Doostan doostan@colorado.edu (via NADIGEST) Date: June 26, 2020 Subject: Postdoc Positions, UQ, Machine Learning, and CFD

Applications are invited for multiple postdoctoral positions available immediately in the Smead Aerospace Engineering Sciences Department at the University of Colorado, Boulder.

Position 1. The appointees will conduct fundamental research in broad areas of data-driven modeling, uncertainty quantification, and machine learning, with a particular focus on multi-fidelity modeling, generative modeling, transfer learning, deep neural networks, and inverse problems. Applicants must have a Ph.D. in areas related to computational sciences or engineering and at least one of the aforementioned areas. The positions are for the duration of one year with the possibility of extension to three years. The appointee will be working with Prof. Alireza Doostan and a team of experts on large-scale, multi-physics, and multi- scale modeling of complex systems and their HPC implementations. The interested candidates should submit a CV, a brief (max one page) statement of research interests, and contact information of two references to Prof. Doostan (doostan@colorado.edu). Questions about these positions may be directed to Prof. Doostan.

Position 2. The appointee will conduct fundamental research in computational fluid dynamics, fluid-structure interaction, and massively parallel simulation. Experience with GPU both for the fluid dynamics simulation and data science/analytics is also valued. Applicants must have a Ph.D. in areas related to computational science, applied math, or engineering. The position is for the duration of one year with the possibility of extension to three years. The appointee will be working with Prof. Kenneth Jansen and a team of experts collaborating on large-scale, multi-physics, multi-scale modeling of porous and high energy materials, as well as their implementation on systems approaching exascale performance. The interested candidates should submit a CV, a brief (max one page) statement of research interests, and contact information of two references to Prof. Kenneth Jansen (kenneth.jansen@colorado.edu). Questions about this position may be directed to Prof. Jansen.

From: rondall jones <rejones7@msn.com> Date: Wednesday, July 1, 2020 Subject: Updated Linear Matrix Solver Web Site

I or a colleague at Sandia Labs have spoken twice at the annual inverse problem conferences about my package of automatic-regularizing solvers for linear matrix equations. I recently re-released the C++ library for these solutions, with minor improvements. At the same time I released a very similar package for Python. Both are available at www.rejones7.net .

Both the C++ and Python sub-sites have Guides for use, relevant tutorials, and examples suitable for students and others of solving linear systems, both easy and difficult.

Ron Jones Rejones7@msn.com

-----From: "noreply@iopscience.org" <noreply@iopscience.org> Reply-To: "noreply@iopscience.org" <noreply@iopscience.org> Date: Saturday, July 11, 2020 Subject: Inverse Problems, Volume 35, Numbers 6,7; Volume 36, Number 7

Inverse Problems June 2019 Volume 35, Number 6 Table of Contents

Special Issue Papers

\ell_0-minimization methods for image restoration problems based on wavelet frames
Jian Lu, Ke Qiao, Xiaorui Li, Zhaosong Lu and Yuru Zou

Learning the invisible: a hybrid deep learning-shearlet framework for limited angle computed tomography Tatiana A Bubba, Gitta Kutyniok, Matti Lassas, Maximilian März, Wojciech Samek, Samuli Siltanen and Vignesh Srinivasan

Rayleigh quotient minimization for absolutely one-homogeneous functionals Tal Feld, Jean-François Aujol, Guy Gilboa and Nicolas Papadakis

Nonlinear optimization for mixed attenuation polyenergetic image reconstruction Yunyi Hu, James G Nagy, Jianjun Zhang and Martin S Andersen

Papers

Near-field linear sampling method for an inverse problem in an electromagnetic waveguide

Peter Monk, Virginia Selgas and Fan Yang

Functions of constant geodesic x-ray transform Joonas Ilmavirta and Gabriel P Paternain

The influence of numerical error on parameter estimation and uncertainty quantification for advective PDE models John T Nardini and D M Bortz

On an inverse potential problem for a fractional reaction-diffusion equation Barbara Kaltenbacher and William Rundell

Optimal convergence rates for sparsity promoting wavelet-regularization in Besov spaces

Thorsten Hohage and Philip Miller

https://iopscience.iop.org/issue/0266-5611/35/6

Inverse Problems	November 2019 Table	Volume 35, Number 11 of Contents
Special Issue Papers		
Special issue rapers		
Analysis and automatic paramete salt-and-pepper noise removal Luca Calatroni and Kostas Papa	er selection of a variati fitsoros	onal model for mixed Gaussian and.
Using sparse control methods to equations E Casas and K Kunisch	o identify sources in lin	ear diffusion-convection
Near-field imaging of locally Xiaoli Liu and Ruming Zhang	perturbed periodic surfac	ces
Inverse elastic scattering pro Xia Ji and Xiaodong Liu	blems with phaseless far	field data
Photoacoustic tomography with approach Gerhard Zangerl, Sunghwan Moon	direction dependent data: and Markus Haltmeier	an exact series reconstruction
Reconstruction of a local pertoneer field measurements Alexander Konschin and Armin Lo	urbation in inhomogeneous echleiter	periodic layers from partial
Tailored interior and boundary electrical impedance tomograph Robert Winkler	parameter transformation Y	ns for iterative inversion in
Sampled Tikhonov regularization J Tanner Slagel, Julianne Chung	n for large linear invers g, Matthias Chung, David	se problems Kozak and Luis Tenorio
Papers		
Identification of space distri model Aníbal Coronel, Fernando Huanca	buted coefficients in an as and Mauricio Sepúlveda	indirectly transmitted diseases
Identifying a fractional order diffusion-wave equation simult	and a space source term aneously	in a time-fractional

Kaifang Liao and Ting Wei

The broken ray transform: additional properties and new inversion formula Michael R Walker II and Joseph A O'Sullivan

A priori estimates of attraction basins for nonlinear least squares, with application to Helmholtz seismic inverse problem Hélène Barucq, Guy Chavent and Florian Faucher

Transform-based particle filtering for elliptic Bayesian inverse problems S Ruchi, S Dubinkina and M A Iglesias

Reconstruction and stable recovery of source terms and coefficients appearing in diffusion equations Yavar Kian and Masahiro Yamamoto

On the identification of a nonlinear term in a reaction-diffusion equation Barbara Kaltenbacher and William Rundell

Identification of an unknown shear force in the Euler-Bernoulli cantilever beam from measured boundary deflection Alemdar Hasanov, Onur Baysal and Cristiana Sebu

Inverting the local geodesic ray transform of higher rank tensors Maarten V de Hoop, Gunther Uhlmann and Jian Zhai

Sparse inverse covariance matrix estimation via the \ell_0-norm with Tikhonov regularization Xinrui Liu and Na Zhang

Sparsity promoting regularization for effective noise suppression in SPECT image reconstruction Wei Zheng, Si Li, Andrzej Krol, C Ross Schmidtlein, Xueying Zeng and Yuesheng Xu

Convergent numerical methods for parabolic equations with reversed time via a new Carleman estimate Michael V Klibanov and Anatoly G Yagola

Recovery of pressure and wave speed for photoacoustic imaging under a condition of relative uncertainty Sebastián Acosta

https://iopscience.iop.org/issue/0266-5611/35/11

Inverse Problems	July 2020	Volume 36, Number	
7			
	Table of Contents		

Special Issue Papers

A note on the minimization of a Tikhonov functional with <code>l^1-penalty</code>

Fabian Hinterer, Simon Hubmer and Ronny Ramlau

A joint reconstruction and lambda tomography regularization technique for energy-resolved x-ray imaging James W Webber, Eric Todd Quinto and Eric L Miller

A convex inversion framework for identifying parameters in saddle point problems with applications to inverse incompressible elasticity Baasansuren Jadamba, Akhtar A Khan, Michael Richards and Miguel Sama

Papers

Convergence rates of Tikhonov regularizations for elliptic and parabolic inverse radiativity problems De-Han Chen, Daijun Jiang and Jun Zou

Analysis of a heuristic rule for the IRGNM in Banach spaces with convex regularization terms Zhenwu Fu, Qinian Jin, Zhengqiang Zhang, Bo Han and Yong Chen

The Calderón problem for the fractional magnetic operator Li Li

On an inverse Robin spectral problem Matteo Santacesaria and Toshiaki Yachimura

Mathematical modeling for 2D light-sheet fluorescence microscopy image reconstruction Evelyn Cueva, Matias Courdurier, Axel Osses, Victor Castañeda, Benjamin Palacios and Steffen Härtel

Continuous limits for constrained ensemble Kalman filter Michael Herty and Giuseppe Visconti

Optimal experimental design under irreducible uncertainty for linear inverse problems governed by PDEs Karina Koval, Alen Alexanderian and Georg Stadler

Inverse scattering for the one-dimensional Helmholtz equation with piecewise constant wave speed Sophia Bugarija, Peter C Gibson, Guanghui Hu, Peijun Li and Yue Zhao

Numerical schemes to reconstruct three-dimensional time-dependent point sources of acoustic waves Bo Chen, Yukun Guo, Fuming Ma and Yao Sun

A Bayesian-based approach to improving acoustic Born waveform inversion of seismic data for viscoelastic media Kenneth Muhumuza, Lassi Roininen, Janne M J Huttunen and Timo Lähivaara

A revisit on Landweber iteration Rommel Real and Qinian Jin Uniqueness of an inverse source problem in experimental aeroacoustics Thorsten Hohage, Hans-Georg Raumer and Carsten Spehr Heuristic discrepancy principle for variational regularization of inverse problems Huan Liu, Rommel Real, Xiliang Lu, Xianzheng Jia and Qinian Jin Carleman estimates for a stochastic degenerate parabolic equation and applications to null controllability and an inverse random source problem Bin Wu, Qun Chen and Zewen Wang Semiclassical inverse spectral problem for seismic surface waves in isotropic media: part I. Love waves Maarten V de Hoop, Alexei Iantchenko, Robert D van der Hilst and Jian Zhai Semiclassical inverse spectral problem for seismic surface waves in isotropic media: part II. Rayleigh waves Maarten V de Hoop, Alexei Iantchenko, Robert D van der Hilst and Jian Zhai https://iopscience.iop.org/issue/0266-5611/36/7 _____ From: "alerts@tandfonline.com" <alerts@tandfonline.com> Date: Friday, June 19, 2020 Subject: Inverse Problems in Science and Engineering, Volume 28, Issues 7-8, now available online on Taylor & Francis Online July 2020 Volume 28, Issue Inverse Problems in Science and Engineering 7 Table of Contents Wells' identification and transmissivity estimation in porous media Hend Ben Ameur , Nejla Hariga-Tlatli & Wafa Mansouri Verification of sequential function specification method with intermittent spray cooling Xiao Zhao , Yuxin Zhao , Zhichao Yin & Bo Zhang Identification of obstacles immersed in a stationary Oseen fluid via boundary measurements Andreas Karageorghis & Daniel Lesnic Pseudospectral method for a one-dimensional fractional inverse problem Maryam Karimi & Mahmoud Behroozifar Computing ill-posed time-reversed 2D Navier-Stokes equations, using a stabilized explicit finite difference scheme marching backward in time Alfred S. Carasso Real-time inverse solution of the composites' cure heat transfer problem under

uncertainty K. I. Tifkitsis & A. A. Skordos

Accelerated alternating minimization algorithm for Poisson noisy image recovery Anantachai Padcharoen , Duangkamon Kitkuan , Poom Kumam , Jewaidu Rilwan & Wiyada Kumam

https://www.tandfonline.com/toc/gipe20/28/7

Table of

Inverse Problems in Science and Engineering August 2020 Volume 28, Issue 8

Contents

Real-time reconstruction of moving point/dipole wave sources from boundary measurements Takashi Ohe

Dynamic analysis and identification of multiple fault parameters in a cracked rotor system equipped with active magnetic bearings: a physical model based approach Nilakshi Sarmah & Rajiv Tiwari

Solving a nonlinear inverse Sturm-Liouville problem with nonlinear convective term using a boundary functional method Chein-Shan Liu , Botong Li & Shilong Liu

A conjugate-gradient approach to the parameter estimation problem of magnetic resonance advection imaging Simon Hubmer , Andreas Neubauer , Ronny Ramlau & Henning U. Voss

A generalized Newton iteration for computing the solution of the inverse Henderson problem Fabrice Delbary , Martin Hanke & Dmitry Ivanizki

Characterization of a vertical crack using Laser Spot Thermography Gabriele Inglese , Roberto Olmi & Agnese Scalbi

https://www.tandfonline.com/toc/gipe20/28/8
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