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IPNet Digest Volume 30, Number 01 January 9, 2023

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Submissions for IPNet Digest:

Mail to ipnet-digest@math.msu.edu Information about IPNet:
https://ipnet.math.msu.edu/

From: IPNet
Sent: Monday, January 9, 2023
Subject: IMPORTANT IPNet Subscription Changes

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*** Important IPNet Subscription Changes ***
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As a reminder, the IPNet will soon be moving under the umbrella of the Inverse Problems International Association (IPIA), with initial hosting generously provided by the Finnish Inverse Problems Society (fips) and the University of Helsinki. More information may be found in the IPNet Digest mailed out on November 14, 2022.

You may receive email from Majordomo@helsinki.fi regarding these new subscription changes. Please note that subscriptions will continue to be free.
Until the transition is complete, submissions to the IPNet Digest may be sent as usual to ipnet-digest@math.msu.edu.

From: Per Christian Hansen <pcha@dtu.dk> Sent: Monday, January 2, 2023
Subject: Postdoc position, Computational UQ, Technical Univ. of Denmark

The Technical University of Denmark opens a 2-year Postdoc position starting May 2023. It is part of the research project CUQI: Computational Uncertainty Quantification for Inverse problems https://sites.dtu.dk/cuqi.

We create a platform for modeling and computations needed to apply Uncertainty quantification (UQ) to a range of inverse problems. This position focuses on the development and use of Statistical Learning as a framework for formulating and performing computational UQ.

You will be responsible for advancing the mathematical and statistical theory behind UQ for inverse problems, e.g., arising from partial differential equations. In addition, you will together with the team aim for bridging the gap between rigorous theoretical analysis and computations. You will work in a team of PhD students, postdocs, and faculty members in the CUQI project. You are expected to interact with our collaborators on applications of UQ for inverse problems.

We are looking for a profile who will also find it exciting to give limited contributions to teaching and training activities as well as supervision of students.

For more details and to apply (deadline March 1, 2023), see:
https://efzu.fa.em2.oraclecloud.com/hcmUI/CandidateExperience/en/sites/CX_1/job/1265/?utm_medium=jobshare

Per Christian Hansen and Kim Knudsen

Submitted by:
Professor Per Christian Hansen Villum Investigator
Section for Scientific Computing
DTU Compute - Technical University of Denmark Tel +45 23.65.27.98
Homepage: http://people.compute.dtu.dk/pcha/
LinkedIn: https://www.linkedin.com/in/per-christian-hansen-23bb55209/ CUQI project:
https://sites.dtu.dk/cuqi

From: Betcke, Marta <m.betcke@ucl.ac.uk> Sent: Wednesday, January 4, 2023
Subject: PhD studentship in Deep learning for nonlinear PDE based inverse problems at UCL

We would like to bring to your attention a 4 year PhD studentship at UCL to work with Marta Betcke and Simon Arridge on "All-at-once deep learning methods for nonlinear PDE based inverse problems", see below for a more detailed project description (and a project ID needed for the application form)

https://ucl-epsrc-dtp.github.io/2023-24-project-catalogue/projects/2228bd1149.html

The application should be completed by 12 (noon) on 26th of January 2023. The instructions and links to a 3-part application form can be found below

https://www.ucl.ac.uk/epsrc-doctoral-training/prospective-students/apply-ucl-esprc-dtp-studentship

The funding is available to both UK home and international students (the number of admitted international students is capped at 30%) and it will be allocated primarily on the basis of academic merit. The candidates are welcome to contact Marta Betcke m.betcke@ucl.ac.uk for an informal discussion of the research project.

Submitted by:
Dr Marta M. Betcke Associate Professor Dept. Computer Science
University College London
90 High Holborn WC1V 6LJ London, UK Email m.betcke@ucl.ac.uk
Tel: +44 (0)20 3549 5568 (Direct Dial)

From: Carola-Bibiane Schönlieb <cbs31@cam.ac.uk> Sent: Sunday, January 8, 2023
Subject: Deadline imminent: Submission for IMA Leslie Fox Prize 2023

The prestigious IMA Leslie Fox Prize is to be held in collaboration with The Alan Turing Institute for the first time. The outstanding, biennal prize was established in 1985 in honour of distinguished mathematician and researcher Leslie Fox. The next prize (the twenty-first) will be

awarded on the 26th of June 2023, aligning with the 29th Biennial Numerical Analysis Conference in Strathclyde.

Entries for the twenty-first IMA Leslie Fox Prize for Numerical Analysis should be submitted by 31st of January 2023 using the form on the website (link below). Any person who is less than 31 years old on 1st of January 2023 and has not already won a first prize is eligible - candidates need not come from academia.

Each entry should be based on a paper, describing some of the candidate's research, that is suitable for a 40 minute lecture at a numerical analysis meeting.

For detailed eligibility criteria and submission guidelines please check the website
https://ima.org.uk/14623/ima-fox-prize-2023-call-for-papers/

Best regards,
Carola Schönlieb

(on behalf of all members of the adjudicating committee, Jan S Hesthaven, Carola Schönlieb and Alex Townsend)
------ end -------

IPNet Digest Volume 30, Number 02 February 09, 2023

IPNet Digest Volume 30, Number 02 9th February, 2023

Today's Editor: Matti Lassas, University of Helsinki Today's Topics:

Submissions for IPNet Digest: submit-ipnet@helsinki.fi

Information about IPNet: https://www.helsinki.fi/en/researchgroups/inverse-problems/ipnet- inverse-problems-network

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From: OIPE 2023 oipe2023@tugraz.at
Sent: 26 January 2023
Subject: OIPE 2023: Call for Papers

17th International Workshop on Optimization and Inverse Problems in Electromagnetism 2023
September, 17 - 20, 2023 | Graz, Austria

Dear colleague,
I am writing to you on behalf of the organizing committee of the 17th International Workshop on Optimization and Inverse Problems in Electromagnetism 2023 (OIPE 2023), which will be held in Graz, Austria, from September 17 to September 20, 2023. It will be organized by the Institute of Fundamentals and Theory in Electrical Engineering, Faculty of Electrical and Information Engineering of Graz University of Technology.
The aim of this workshop is to discuss and share recent developments in optimization and inverse methodologies and their applications to the design and working principle of electromagnetic devices. A special focus will be put on machine learning techniques and optimal energy management.

Please find the call for papers on the website oipe2023.tugraz.at

Additionally, after the workshop a one-day doctoral course is scheduled. International experts will teach PhD students and researchers entering the field in selected aspects.
For further details, please refer to the website or feel free to contact the organizers directly by e-Mail (oipe2023@tugraz.at).

I am looking forward to meeting you in Graz in autumn 2023.

Alice Reinbacher-Köstinger
Chair OIPE 2023

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From: Barbara Kaltenbacher Barbara.Kaltenbacher@aau.at
Sent: 2 Feb 2023
Subject: 3rd Alps-Adriatic Inverse Problems Workshop 2
Dear Colleagues,

We are organizing the "3rd Alps-Adriatic Inverse Problems Workshop" - an Inverse Problems Workshop at the Department of Mathematics of the Alpen-Adria-Universität Klagenfurt, **July 5-7, 2023**:

https://aaip2023.aau.at/

The aim of this workshop is to gather scientists working on the theory and applications of inverse problems in academia and industry, in order to present their research, exchange ideas, and start new collaborations. Scientists at an early stage of the career (PhD students, postdocs) are particularly encouraged to participate.
3rd Alps-Adriatic Inverse Problems Workshop 2023 (AAIP 2023) (5-7 July 2023): Overview · Conferences @ Universität Klagenfurt (Indico)
aaip2023.aau.at
Note that a summer school on inverse problems will be held during July 3-4, 2023:
https://aaip-summerschool-2023.aau.at
1st Alps-Adriatic Inverse Problems Summer School (3-4 July 2023): Overview · Conferences @ Universität Klagenfurt (Indico) (aau.at)
Please encourage junior researchers from your group to participate. Registration for both events is already open.
If you intend to participate, we strongly recommend to book an accommodation in Klagenfurt as soon as possible, since beginning of July coincides with beginning of summer season here, with a lot of tourists around.
Best regards,
Barbara Kaltenbacher and Elena Resmerita (on behalf of the organizers)
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From: Giovanni Alberti **Giovanni.Alberti@unige.it** **Sent:** 30 January 2023
Subject: PhD and Postdoc positions - University of Genoa, Italy

The Machine Learning Genoa Center, University of Genoa, opens one Postdoc position and one PhD position on inverse problems.

PHD. This project is focused on using methods of applied harmonic analysis, in particular compressed sensing, wavelet theory and approximation theory, and of machine learning to solve inverse problems. We shall focus on inverse problems described by integral operators, as well as those modelled by PDEs. Supervised by Giovanni S. Alberti. Start in Fall 2023.

POSTDOC. The project focuses on machine learning approaches for ill-posed inverse problems with an emphasis on infinite-dimensional problems defined by integral and partial differential equations. The goal is to develop algorithms for which rigorous guarantees can be developed both in terms of accuracy, stability and computational requirements. Supervised by Giovanni S. Alberti and Lorenzo Rosasco. Flexible start.

More details and expressions of interest (and additional PhD positions on machine learning):
https://malga.unige.it/#open-positions
Best wishes Giovanni Alberti

https://www.dima.unige.it/~alberti/

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From Jennifer Mueller <mueller@math.colostate.edu>
Sent: Wednesday, January 18, 2023 4:55 PM
Subject: Submission for IPNet Digest Dear Colleagues,
We are pleased to announce the launch of a new AIMS journal, now accepting submissions: Applied Mathematics for Modern Challengeshttps://www.aimsciences.org/AMMC

Applied Mathematics for Modern Challenges (AMMC) is an interdisciplinary journal with a focus on real-world applications of applied mathematics. Articles should include mathematics applied to practical problems with supporting examples that include real-world data. Several kinds of scientific novelty are appreciated in this journal. Novelty can be achieved through offering end-users with unprecedented mathematical solutions, even with tried-and-true methods. Or, novelty can be of a more traditional sort, producing new mathematics for a problem of contemporary interest. To promote timeliness, the journal has a page limit and rapid time to publication. Inclusion of open- source data, open code, and supplementary materials is encouraged. Application areas of particular interest are physical and life sciences, including medicine, climate modeling, and
engineering. Mathematical areas of particular interest include mathematical modeling, scientific computation, dynamical systems, inverse problems, imaging science, data science, optimization, and control theory.

Best regards,
Jennifer Mueller and Samuli Siltanen

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IPNet Digest Volume 30, Number 03 7th, March 2023

Today's Editor: Matti Lassas University of Helsinki Today's Topics:

Submissions for IPNet Digest: submit-ipnet@helsinki.fi
Information about IPNet: https://www.helsinki.fi/en/researchgroups/inverse- problems/ipnet-inverse-problems-network
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From: Schlottbom, Matthias (UT-EEMCS), m.schlottbom@utwente.nl
Sent: 13th February 2023
Subject: Assistant or Associate Professor position in Numerical Analysis and Scientific Computing at the University of Twente

We offer an Assistant or Associate Professor position in Numerical Analysis and Scientific Computing in the Department of Applied Mathematics at the University of Twente (UT).

Within the department, the Mathematics of Computational Science group focuses on numerical methods for (partial) differential equations and inverse problems, see also https://www.utwente.nl/en/eemcs/sacs/

The application deadline is March 25th, 2023. More information and a button to start the application process can be found at https://utwentecareers.nl/en/vacancies/1057/assistantassociate-professor-in-numerical-analysis- and-scientific-computing/

Best regards, Matthias Schlottbom

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From: Margaret Cheney, cheney.margaret@gmail.com
sent: 14th February 2023
Subject: Postdoc position, Colorado State University
Postdoc position, Colorado State University

Colorado State University plans to hire a postdoc to work on a DARPA-funded interdisciplinary project involving radar signal processing and tracking. The preferred background for the candidate includes familiarity with wave propagation, Fourier analysis, and statistical signal processing, together with programming experience. Experience with GPUs would be ideal. The initial funding is for 15 months, with a possible 9-month extension that would focus on developing fast algorithms and GPU implementation. The expected start date is late summer of 2023.

Please contact Prof. Margaret Cheney (cheney@math.colostate.edu) and apply to one or both of the listings below:

https://jobs.colostate.edu/postings/119055 (ECE postdoc listing)
https://jobs.colostate.edu/postings/116142 (Math postdoc listing)

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From: Andreas Hauptmann, Andreas.Hauptmann@oulu.fi
Sent: 1st March 2023
Subject: Postdoc position at University of Oulu on Nonlinear Inversion in Low-Field MRI

The Inverse Problems Group at the University of Oulu is announcing a **Postdoctoral position on "Nonlinear Inversion in Low-Field MRI"**
Link to the announcement: https://oulunyliopisto.varbi.com/what:job/jobID:601357/
The position is located at the Research Unit of Mathematical Sciences, which has an internationally strong position at the forefront of research in its focus areas. The Inverse Problems Group within the Research Unit is a member of the Finnish Center of Excellence in Inverse Problems Research, funded by the Academy of Finland for the period 2018 – 2025.
About the project
In low-field MRI many ideal assumptions of the high-field equivalent are not fully satisfied, and hence advanced reconstruction methods are necessary to obtain satisfactory reconstructions. In this project, the candidate is expected to perform fundamental research on advanced image reconstruction techniques while taking into account the nonlinear nature of MR signal generation.
As part of the project, the candidate is expected to take part in planning and potential construction of an in-house research low-field MR within the collaborative consortium.
The project will be conducted in collaboration with Prof. Miika Nieminen at the Research Unit of Medical Imaging, Physics and Technology, University of Oulu and Assoc. Prof. Mikko Nissi and Prof. Ville Kolehmainen at the Department of Technical Physics, University of Eastern Finland.
The position is fixed-term for 2 years as and can be filled as soon as possible, but no later than 01.01.2024.

Deadline to apply is *April 14th 2023* (23:59 Finnish local time) through our recruitment system:
https://oulunyliopisto.varbi.com/what:job/jobID:601357/
If you have any further questions, please contact
Associate Professor & Academy Research Fellow Andreas Hauptmann,
Research Unit of Mathematical Sciences, University of Oulu e-mail: andreas.hauptmann@oulu.fi
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From: Tanja Tarvainen tanja.tarvainen@uef.fi
Sent: 3rd March 2023
Subject: Postdoc position in the University of Eastern Finland
A postdoc position in an ERC-CoG project of Professor Tanja Tarvainen entitled 'Quantitative Tomography Using Coupled Physics of Waves'

The project focuses on computational modelling and inverse problems of coupled physics tomography using light and ultrasound. The aim is to develop numerical approximations for equations describing light and ultrasound propagation, and computational methods for the solving the inverse problem.

More information on the position, and the application portal, are available at the following link:
https://rekry.saima.fi/certiahome/open_job_view.html?did=5600&jc=16&id=000014578&lang=fi

Best regards Tanja Tarvainen
https://uefconnect.uef.fi/en/person/tanja.tarvainen/
……

From: Giovanni Alberti, Giovanni.Alberti@unige.it
Sent: 16th February 2023

Subject: MaLGa Summer Schools 2023 - DLCV and ModML
As part of the scientific activity and educational offer of MaLGa - Machine Learning Genoa Center, we are glad to announce that applications are open for the following PhD courses:

DLCV - Deep Learning and Computer Vision (course web page here), to be held **5-9 June 2023** This second edition provides a theoretical and hands-on introduction to basic principles of deep architectures, computer vision algorithms and their strong connections.
*Apply here by **April 23rd 2023***

ModML - Topics in Modern Machine Learning (course web page here) to be held **19-23 June 2023** An evolution of RegML, ModML presents advanced machine learning topics in an introductory and insightful manner, allowing participants to further dig in as they see fit.
*Apply here by **April 16th 2023***

Our schools are open to students, researchers and professionals, upon acceptance based on CV selection. The maximum number of participants for each school is 120.

Follow us on social media to stay up to date on our latest news!
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From: noreply@iopscience.org
Subject: Inverse Problems, Volume 39, Number 2, February 2023
Sent: 25th February 2023
Inverse Problems March 2023 Volume 39 Number 3
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Free article:
Foreword to special issue of *Inverse Problems* on modern challenges in imaging Bernadette N Hahn, Eric Todd Quinto and Gaël Rigaud

Special Issue article
Stability and numerical analysis of backward problem for subdiffusion with time-dependent coefficients
Zhengqi Zhang and Zhi Zhou

Masked unbiased principles for parameter selection in variational image restoration under Poisson noise
Francesca Bevilacqua, Alessandro Lanza, Monica Pragliola and Fiorella Sgallari

Spectral decomposition of atomic structures in heterogeneous cryo-EM
Carlos Esteve-Yagüe, Willem Diepeveen, Ozan Öktem and Carola-Bibiane Schönlieb

Imaging based on Compton scattering: model uncertainty and data-driven reconstruction methods
Janek Gödeke and Gaël Rigaud

PAPERS

Discrete Calderón problem with partial data
Rodrigo Lecaros, Jaime H Ortega, Ariel Pérez and Luz De Teresa

On the exactness of the universal backprojection formula for the spherical means Radon transform

M Agranovsky and L Kunyansky

An omnidirectional seismic image extension Fons ten Kroode

On the robustness of inverse scattering for penetrable, homogeneous objects with complicated boundary
Carlos Borges, Manas Rachh and Leslie Greengard

Compartmental modelling in epidemic diseases: a comparison between SIR model with constant and time-dependent parameters
Arun Kumar Sikder, Md Biplob Hossain and Md Hamidul Islam

Multi-material inverse design of soft deformable bodies via functional optimization Chaitanya Awasthi, Andrew Lamperski and Timothy M Kowalewski

A mathematical framework for nonlinear wavefront reconstruction in adaptive optics systems with Fourier-type wavefront sensing
Victoria Hutterer, Andreas Neubauer and Julia Shatokhina

Rethinking data-driven point spread function modeling with a differentiable optical model Tobias Liaudat, Jean-Luc Starck, Martin Kilbinger and Pierre-Antoine Frugier

A regularization method based on level-sets for the problem of crack detection from electrical measurements
A De Cezaro, E Hafemann, A Leitão and A Osses

Inverse Problems, Volume 39, Number 3, March 2023, March 2023 - IOPscience

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IPNet Digest Volume 30, Number 04 12th, April 2023

Today's Editor: Matti Lassas University of Helsinki Today's Topics:
Postdoctoral Fellow in Inverse Problems at UNC, Charlotte
Postdoctoral Researcher: ERC funded project in Mathematical Inverse problems
Call for bids for the AIP conference 2025
10th International Conference on Inverse Problems in Engineering, published proceedings Inverse conference
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Submissions for IPNet Digest: submit-ipnet@helsinki.fi
Information about IPNet: https://www.helsinki.fi/en/researchgroups/inverse- problems/ipnet-inverse-problems-network

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From: Taufiquar Khan, taufiquar.khan@uncc.edu
Sent: 8 March 2023
Subject: Postdoctoral Fellow in Inverse Problems at UNC, Charlotte Position Title: **Postdoctoral Fellow in Inverse Problems**

Applications are invited for a postdoctoral research position at the University of North Carolina at Charlotte. The duration of this position is a one year position with a possibility of renewal up to two additional years, subject to a budget approval. The successful candidate will work under the supervision of Professor Taufiquar Khan. The research of this candidate will be focused on implementation of AI and Deep Learning based algorithms, and providing performance guarantees for such algorithms for solving forward and inverse problems appearing in mathematical imaging. The candidate is also expected to have sufficient background on regularization of ill-posed inverse problems arising from coefficient inverse problems involving partial differential equations.

The position will begin on July 1, 2023 and the candidate will be paid $48,000, annually. Interested candidates are welcome to send their curriculum vitas, a brief (max one page) statement of research interests and one to three papers/preprints reflecting their research experience to **https://jobs.uncc.edu** (please click "Post Doc."). In addition to submitting your application electronically, please email your materials to Professor Khan's assistant, Ms. Jennifer Bagby (**jbagby1@uncc.edu**) Questions about this position may be directed to Ms. Jennifer Bagby.

Charlotte offers a dynamic space to live, work and connect for faculty, students, alumni, and staff, with its outstanding cultural, recreational, and business amenities. As the 15th largest U.S. city, Charlotte is consistently ranked one of the best cities to live (#20 by U.S. News & World Report.)

Thanks and regards,

Taufiquar R Khan, Ph.D. Professor and Chair
Department of Mathematics and Statistics
University of North Carolina (UNC) at Charlotte|Fretwell 360E 9201 University City Blvd., Charlotte, NC 28223, USA
Phone: 704-687-0635 | Fax: 704-687-1392
taufiquar.khan@uncc.edu | http://www.math.uncc.edu

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From: Lauri Oksanen, lauri.oksanen@helsinki.fi
Sent: 7 April 2023
Subject: Postdoctoral Researcher: ERC funded project in Mathematical Inverse problems

The Department of Mathematics and Statistics at the University of Helsinki invites applications for a Postdoctoral Researcher position in mathematical inverse problems at the University of Helsinki. The position will be funded by the ERC grant LoCal "Lorentzian Calderon problem: visibility and invisibility" led by Professor Lauri Oksanen.
The LoCal project will develop techniques that lie at the intersection of partial differential equations and geometry, with affinity to control theory and general relativity. A physical interpretation of the Lorentzian Calderon problem asks us to recover a moving medium given data generated by acoustic waves probing the medium, and seen from the mathematical point of view, it is the simplest formulation of an inverse boundary value problem for a linear wave equation that is expressed in a generally covariant fashion.
Position is for 2 years, with a possible extension to a 3rd year. Preferred starting time is in Fall 2023.

The starting salary of a Postdoctoral Researcher is typically 3500 - 3800 euros/month, depending on previous qualifications and experience.
The University of Helsinki offers comprehensive services to its employees, including occupational health care and health insurance, sports facilities, and opportunities for professional development. The University provides support for internationally recruited employees with their transition to work and life in Finland. For more on the University of Helsinki as an employer, please see https://www.helsinki.fi/en/about-us/careers.

Interested applicants are advised to submit their application by going to the open position application: ERC Funded Postdoc Position in Mathematical Inverse Problems (helsinki.fi) The deadline for applications is on May 12th, 2023.

For more information, please contact lauri.oksanen@helsinki.fi

Kind regards, Lauri Oksanen
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From: Kaltenbacher, Barbara, Barbara.Kaltenbacher@aau.at
Sent: 18 March 2023
Subject: Call for bids for the AIP conference 2025

The Executive Committee of the Inverse Problems International Association IPIA invites applications for the organization of the Applied Inverse Problems Conference in 2025.
Applications should include the following information:
City: In which city should AIP 2025 take place? Describe how to get there by plane!
Date: Which date or dates are planned/possible?
Organizers: Who will be responsible for the organization, who will support the main organizer(s)?
Scientific Committee: Please name members of the scientific committee. It should include at least three members of the Executive committee (EC). You may either suggest these EC members yourself or leave the selection to the EC.
Location: Which rooms are available for the plenary talks and for the parallel sessions?
Please provide their number, capacity, and distances between them! How many hotel rooms are available in the vicinity of the conference center? Are there restaurants, canteens or locations for lunch close by?
Social Program: Do you plan a conference dinner, a reception, trips to local attractions or any other activities?
Finances: Which local funds are available to support the conference? What are the costs for the reservation of lecture halls and/or hotel rooms and when are they due?
IPIA may be able to lend some money for this purpose. Please contact us if you want to use this option!

Please send your application to ipia@gwdg.de by May 31, 2023.
Letters of intent (not yet necessarily containing all the details metioned above) should be sent to ipia@gwdg.de by April 30, 2023.
For questions please do not hesitate to address us at ipia@gwdg.de
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From: Filippo De Monte, filippo.demonte@univaq.it
Sent: 15 March 2023

Subject: Proceedings Inverse Conference

10th International Conference on Inverse Problems in Engineering (ICIPE 22) that was held in Francavilla al Mare (Chieti), Italy, May 15-19, 2022.

The ICIPE22 JPCS conference proceedings volume by IOP is now published and available online for free access.
Go to: Journal of Physics: Conference Series, Volume 2444, 2023 - IOPscience

The ICIPE 22 special section by ASME Journal of Verification, Validation and Uncertainty Quantification is now published and available online.
Go to: Volume 7 Issue 4 | J. Verif. Valid. Uncert. | ASME Digital Collection

Yours sincerely,
Filippo
Filippo de Monte
ICIPE22 Conference Chair
……

From: noreply@iopscience.org
Subject: Inverse Problems, Volume 39, Number 4, April 2023
Sent: 1 April 2023
Inverse Problems April 2023 Volume 39 Number 4

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Sparse optimization problems in fractional order Sobolev spaces
Harbir Antil and Daniel Wachsmuth 2023 *Inverse Problems* 39 044001

Block delayed Majorize-Minimize subspace algorithm for large scale image restoration *
Mathieu Chalvidal, Emilie Chouzenoux, Jean-Baptiste Fest and Claire Lefort 2023 *Inverse Problems* 39 044002

Vertical autofocus for the phase screen in a turbulent ionosphere
Mikhail Gilman and Semyon Tsynkov 2023 *Inverse Problems* 39 045001

Orientation estimation of cryo-EM images using projected gradient descent method
Huan Pan, Jian Lu, You-Wei Wen, Chen Xu and Tieyong Zeng 2023 *Inverse Problems* 39 045002

Stability in inverse problem of an elastic plate with a curved middle surface
Song-Ren Fu and Peng-Fei Yao 2023 *Inverse Problems* 39 045003 Inverse Problems, Volume 39, Number 4, April 2023

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From: cdenton@aimsciences.org **Subject**: Table of contents, AIMS **Sent:** 29 March 2023

Free IPI article:
The enclosure method for the detection of variable order in fractional diffusion equations
Masaru Ikehata and Yavar Kian

Special Issue IPI articles from "Special issue on analytical aspects of inverse problems in PDEs":
Preface
Katya Krupchyk, Mikko Salo, Gunther Uhlmann and Jenn-Nan Wang

On the scientific work of Victor Isakov
Katya Krupchyk, Mikko Salo, Gunther Uhlmann and Jenn-Nan Wang

New notions and constructions of the boundary control method
M. I. Belishev

A spectral target signature for thin surfaces with higher order jump conditions Fioralba Cakoni, Heejin Lee, Peter Monk and Yangwen Zhang

Two single-measurement uniqueness results for inverse scattering problems within polyhedral geometries
Xinlin Cao, Huaian Diao, Hongyu Liu and Jun Zou

Global unique continuation from the boundary for a system of viscoelasticity with analytic coefficients and a memory term
Matthias Eller, Naofumi Honda, Ching-Lung Lin and Gen Nakamura

Microlocal analysis of borehole seismic data
Raluca Felea, Romina Gaburro, Allan Greenleaf and Clifford Nolan

A uniqueness theorem for inverse problems in quasilinear anisotropic media Md. Ibrahim Kholil and Ziqi Sun

Convexification-based globally convergent numerical method for a 1D coefficient inverse problem with experimental data
Michael V. Klibanov, Thuy T. Le, Loc H. Nguyen, Anders Sullivan and Lam Nguyen

Refined instability estimates for some inverse problems Pu-Zhao Kow and Jenn-Nan Wang

Kantorovich-Rubinstein metric based level-set methods for inverting modulus of gravity-force data
Wenbin Li and Jianliang Qian

Linearized inverse Schrödinger potential problem with partial data and its deep neural network inversion
Sen Zou, Shuai Lu and Boxi Xu

IPI June 2023 Vol. 17, No. 3 articles:
Imaging of conductivity distribution based on a combined reconstruction method in brain electrical impedance tomography
Yanyan Shi, Yajun Lou, Meng Wang, Shuo Zheng, Zhiwei Tian and Feng Fu

A Majorization-Minimization Golub-Kahan bidiagonalization method for *L2-Lq* mimimization with applications in image restorization
Wenqian Zhang and Guangxin Huang

Stable determination of an anisotropic inclusion in the Schrödinger equation from local Cauchy data

Sonia Foschiatti and Eva Sincich

Determination of piecewise homogeneous sources for elastic and electromagnetic waves Jian Zhai and Yue Zhao

Reconstruction of acoustic source with high-curvature part Tao Li, Youjun Deng and Xiaoping Fang

A distance function based cascaded neural network for accurate polyps segmentation and classification Yuanhong Jiang, Jingwei Liang, Weiqi Xiong, Qiwei Li, Yijue Zhang, Tao Chen and Xiaoqun Zhang

On the range of the *X*-ray transform of symmetric tensors compactly supported in the plane Kamran Sadiq and Alexandru Tamasan

Coupling local and nonlocal fourth-order evolution equations for image denoising Kehan Shi

Efficient convex region-based segmentation for noising and inhomogeneous patterns Ibrar Hussain and Jan Muhammad

Deep CNN denoiser prior for blurred images restoration with multiplicative noise Yingying Li, Jun Hu, Guoxi Ni and Tieyong Zeng

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IPNet Digest Volume 30, Number 05 17 May 2023

Today's Editor: Matti Lassas University of Helsinki Today's Topics:
PhD positions in MSCA training network on computational imaging for smart biomedical devices
Postdoc position, Computational UQ, Technical University of Denmark
PhD/Postdoc position at Goethe University, Frankfurt
Senior lecturer or Associate Professor in optimization
OIPE 2023: Call for Papers
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Submissions for IPNet Digest: submit-ipnet@helsinki.fi
Information about IPNet: https://www.helsinki.fi/en/researchgroups/inverse- problems/ipnet-inverse-problems-network

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From: Felix Lucka <Felix.Lucka@cwi.nl>
Sent: Tuesday, 17 April, 2023
Subject: PhD positions in MSCA training network on computational imaging for smart biomedical devices

Dear colleagues (apologies for cross-postings),

CONcISE (COmputatioNal Imaging as training Network for Smart biomedical dEvices) is a new project funded by the European Union's Marie Skłodowska-Curie Actions (MSCA) of the Horizon Europe programme that aims to revolutionise biomedical optical imaging techniques. It brings together eight beneficiaries and four associated partners from 8 European countries to create a training network for 11 PhD students. The recruiting just started and three of the positions are of particular interest for students with an interest in computational imaging and inverse problems:

"Photon transport modelling and image reconstruction algorithms for multispectral DOT" will be hosted by the Computational Physics and Inverse Problems Research Group at the University of Eastern Finland (Kuopio, Finland) and supervised by Tanja Tarvainen.
"Adaptive compressed sensing using deep learning in non-linear microscopy", will be hosted by the Computational Imaging Group at the Centrum Wiskunde & Informatica (Amsterdam, NL) and supervised by Felix Lucka and Tristan van Leeuwen.
"Learned adaptive encoder-decoder architecture for advanced fluorescence imaging", hosted by the Center for Medical Image Computing at the University College London (London, UK) and supervised by Simon Arridge.
All information can be found under https://urldefense.com/v3/__https://concise- project.eu/vacancies/__;!!HXCxUKc!wObnFkzF52SC_8bc3Fni- GhHpPVi7AXI1lGxPrW4algndZqUxjKc2etYhyJ6ps0T1wUT-j_K4jvmZBlrbcVUHHpNGJv-$

Please help us spread the word and forward this to anyone in your network who might be interested.

Thanks a lot and best regards,
Tanja Tarvainen, Simon Arridge and Felix Lucka

Felix Lucka (he/him)
Centrum Wiskunde & Informatica
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From: Per Christian Hansen <pcha@dtu.d>
Sent: Wednesday, 8 May, 2023

Subject: Submission to IPNet Digest (vacancy)

Heading: Postdoc position, Computational UQ, Technical University of Denmark
The Technical University of Denmark opens a 2-year Postdoc position starting August 2023. It is part of the research project CUQI: Computational Uncertainty Quantification for Inverse problems https://sites.dtu.dk/cuqi.
We create a platform for modeling and computations needed to apply UQ to a range of inverse problems. This position focuses on further development of our package CUQIpy https://cuqi-dtu.github.io/CUQIpy including development of the underlying computational methods.

You will join the developer team and play an integral role in expanding CUQIpy for a wide range of inverse problems and UQ analyses. You will interact with the CUQI team to ensure that our theory and methods are put into optimal use. Research directions may include:
Design, abstraction & implementation of Bayesian methods.
Approximation methods for high-dimensional complicated posteriors.
Scalable optimization-based samplers (such as RTO).
Sampling methods exploiting gradient information.
Support and training of CUQIpy users.
CUQIpy is developed in a highly collaborative GitHub-centered workflow with regular programming sessions, code reviews, sprints, and hackathons. We offer rich opportunities to build a profile in scientific software development and computational UQ for inverse problems.
For more details and to apply (deadline June 1, 2023), see:
https://efzu.fa.em2.oraclecloud.com/hcmUI/CandidateExperience/en/sites/CX_1/job/1650/?utm_medium=jobshare
Per Christian Hansen and Jakob Sauer Jørgensen, DTU Compute
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From: Bastian von Harrach <harrach@math.uni-frankfurt.de>
Sent: Wednesday, 15 May, 2023
Subject: PhD/Postdoc position at Goethe University, Frankfurt

The Institute of Mathematics (research group of Prof. Dr. Bastian
Harrach) of the Department of Computer Science and Mathematics of the Goethe-University Frankfurt am Main invites applications for a Research Assistant (m/f/d) PhD/Postdoc position (100%
E13 TV-G-U, limited to 3
years) in the field of Inverse Problems. A link to the official job advertisement can be found here: http://numerical.solutions (please click "EN" in the upper right for the english job ad). Applications can be considered after the stated deadline until the position is filled.

Prof. Dr. Bastian von Harrach Institute of Mathematics Goethe University Frankfurt Robert-Mayer-Str. 10
60325 Frankfurt am Main Germany

Phone: +49 69 798 28622
mailto:harrach@math.uni-frankfurt.de http://numerical.solutions
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From: Larisa Beilina <larisa.beilina@chalmers.se>
Sent: Wednesday, 3 May, 2023
Subject: Senior lecturer or Associate Professor in optimization

The Department of Mathematical Sciences at Chalmers University of Technology and University of Gothenburg, Sweden, invites applications for a position Senior lecturer or associate professor in mathematics of optimization and computation (permanent position).

We look forward to your contribution to our research in the area of mathematical optimization, interpreted in a broad sense. This includes, but is not limited to, linear and integer optimization, non-linear programming, non-smooth optimization, inverse problems, optimal control, calculus of variations, machine learning, multilevel optimization, operations research, as well as modelling and solution of applied optimization problems.

The application should be sent electronically
by going to the link for open position application:

https://www.chalmers.se/en/about-chalmers/work-with- us/vacancies/?rmpage=job&rmjob=p11730

The deadline for applications is on June 11th, 2023.

Kind regards, Larisa Beilina, Ph.D. Professor
Department of Mathematical Sciences
Chalmers University of Technology and Gothenburg University, SE-41296, Gothenburg, Sweden
t. +46-031-7723567
(mob.) +46-070-4177036
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From OIPE 2023 <oipe2023@tugraz.at>
Sent: Monday 17 April, 2023
Subject: OIPE 2023: Call for Papers

17th International Workshop on Optimization and Inverse Problems in Electromagnetism 2023
September, 17 - 20, 2023 | Graz, Austria Dear colleague,
I am writing to you on behalf of the organizing committee of the **17th International Workshop on Optimization and Inverse Problems in Electromagnetism 2023** (OIPE 2023), which will be held in Graz, Austria, from September 17 to September 20, 2023. It will be organized by the Institute of Fundamentals and Theory in Electrical Engineering, Faculty of Electrical and Information Engineering of Graz University of Technology.
The aim of this workshop is to discuss and share recent developments in optimization and inverse methodologies and their applications to the design and working principle of electromagnetic devices.
We are pleased to announce the **special sessions and keynote speakers** of OIPE 2023:
Special session on Topology Optimization in Electromagnetics
Keynote by Peter **Gangl**, Johann Radon Institute for Computational and Applied Mathematics, Linz (Austria)

Special session on Optimal Energy System Management
Keynote by Bharath **Rao**, Austrian Institute of Technology, Wien (Austria)

Optimization of Metamaterials in Electromagnetics
Keynote by Sławomir **Hausman**, Technical University of Lodz (Poland)

Please find the call for papers on the website oipe2023.tugraz.at.

Additionally, a one-day doctoral course on **Regularization Methods for Discrete Inverse Problems** will be held by **Silvia Gazzola**, University of Bath (UK), on Thursday, September 21, 2023.
For further details, please refer to the website or feel free to contact the organizers directly by e-Mail (oipe2023@tugraz.at).

I am looking forward to meeting you in Graz in autumn 2023.

Alice Reinbacher-Köstinger
Chair OIPE 2023
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From: noreply@iopscience.org
Subject: Inverse Problems, Volume 39, Number 5, May 2023
Sent: 25 April 2023

Inverse Problems May 2023 Volume 39 Number 5 Special Issue Articles
On global normal linear approximations for nonlinear Bayesian inverse problems
Ruanui Nicholson, Noémi Petra, Umberto Villa and Jari P Kaipio

Imaging in lossy media
Arnold Kim and Chrysoula Tsogka

Neural blind deconvolution with Poisson data
A Benfenati, A Catozzi and V Ruggiero
Sub-aperture SAR imaging with uncertainty quantification
Victor Churchill and Anne Gelb

Norm-dependent convergence and stability of the inverse scattering series for diffuse and scalar waves
Srinath Mahankali and Yunan Yang

Fluorescence image deconvolution microscopy via generative adversarial learning (FluoGAN)
Mayeul Cachia, Vasiliki Stergiopoulou, Luca Calatroni, Sebastien Schaub and Laure Blanc-Féraud

Papers

Analysis of sampling methods for imaging a periodic layer and its defects
Yosra Boukari, Houssem Haddar and Nouha Jenhani

Uniformly convex neural networks and non-stationary iterated network Tikhonov (iNETT) method
Davide Bianchi, Guanghao Lai and Wenbin Li
A probabilistic framework for uncertainty quantification in positron emission particle tracking
Avshalom Offner, Sam Manger and Jacques Vanneste

Uniqueness in determining rectangular grating profiles with a single incoming wave (Part I): TE polarization case
Jianli Xiang and Guanghui Hu

A mixed element scheme for the Helmholtz transmission eigenvalue problem for anisotropic media
Qing Liu, Tiexiang Li and Shuo Zhang

Reconstruction of smooth shape defects in waveguides using locally resonant frequencies
Angèle Niclas and Laurent Seppecher
Inverse Problems, Volume 39, Number 5, May 2023, May 2023 - IOPscience

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IPNet Digest Volume 30, Number 06 4 July 2023

Today's Editor: Matti Lassas University of Helsinki Today's Topics:
University assistant with doctorate, Graz, Austria
Post doc opportunity at UCL in Maths for Deep Learning
table of contents
Submissions for IPNet Digest: submit-ipnet@helsinki.fi
Information about IPNet: https://www.helsinki.fi/en/researchgroups/inverse- problems/ipnet-inverse-problems-network

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From: Moser, Melanie (melanie.moser@uni-graz.at)
Sent: Tuesday, 31 May, 2023
Subject: University assistant with doctorate, Graz, Austria

At the University of Graz, researchers and students work across a broad disciplinary spectrum to enlarge our knowledge, and find strategies to deal with challenges our society is confronted with and to shape tomorrow's world. The University of Graz is a place which combines high quality academic research and teaching, where achievement is rewarded, careers are promoted, and social diversity is encouraged – all within a modern, award-winning working environment. Our motto: We work for tomorrow. Join us!

The Institute of Mathematics and Scientific Computing is looking for a University assistant with doctorate (m/f/d)
https://jobs.uni-graz.at/ausschreibung/en/?jh=jtord8gt96973dzvt6369yn1sdq133z
40 hours a week
fixed-term employment for 6 years*; position to be filled as of now
Inverse Problems and Mathematical Image Processing is one of the research areas at the Institute of Mathematics and Scientific Computing, which is represented in Graz by a dedicated team of international scientists. The associated research group covers a broad spectrum of current applications with a special focus on interdisciplinarity. It offers a friendly working environment, space for creativity and independent work, an appreciative attitude and family friendliness.

Your duties

Research in the field of applied mathematics with emphasis on the analysis and the numerics of problems in mathematical imaging, inverse problems and data sciences
Collaboration in interdisciplinary cooperation projects and third-party funded projects
Independent teaching of courses in the field of applied mathematics, supervision of students and holding of examinations
Participation in organizational and administrative matters
Student support and supervision
Cooperation on organisational and administrative tasks as well as evaluation measures Your Profile
Completed doctorate/PhD in the field of Mathematics
Solid knowledge of one of the following fields: mathematical methods, analysis and numerics in imaging, inverse problems or data sciences
Ability for integration into the institute's research profile and in particular into interdisciplinary cooperation projects
Capacity for teamwork, organizational talent and ability to communicate
Ability to teach in German (after a transition period of 2 years)

Our Offer Classification

Salary scheme of the Universitäten-KV (University Collective Agreement): B1

Minimum Salary
The minimum salary as stated in the collective agreement and according to the classification scheme is EUR 60.926,60 gross/year (for full-time employment). The minimum monthly net income can be estimated as EUR 3.350,00 per month (actual net income may differ). This minimum salary may be higher due to previous employment periods eligible for inclusion and other earnings and remunerations.
We offer you a job with a lot of responsibility and variety. You can expect an enjoyable work climate, flexible work hours and numerous possibilities for further education and personal development. Take advantage of the chance to enter into a challenging work environment full of team spirit and enthusiasm for your job.
Application deadline: 05.07.2023
The University of Graz strives to increase the proportion of women in particular in management and faculty positions and therefore encourages qualified women to apply.

Especially with regard to academic staff, we welcome applications from persons with disabilities who meet the requirements of the advertised position.
* Please note the limitations of § 109 UG (university act), especially in the case of short contract terms. For further information, please refer to our general application regulations. For further information or questions, please contact:
Univ.-Prof. Dipl.-Math. Dr. Kristian Bredies kristian.bredies@uni-graz.at 03163805170
Please note that in order to comply with the applicable data protection regulations, we can only accept applications via our web-based applicant tool for this vacant position.
Official job announcement: https://jobs.uni-graz.at/ausschreibung/en/?jh=jtord8gt96973dzvt6369yn1sdq133z
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From: Simon Arridge <S.Arridge@cs.ucl.ac.uk>
Sent: Wednesday, 1 June, 2023
Subject: Post doc opportunity at UCL in Maths for Deep Learning

We have an opportunity for a 3 year postdoc position at UCL on our programme grant "Maths for Deep Learning"
https://maths4dl.ac.uk/
For more information about the post and how to apply, please visit: https://www.ucl.ac.uk/work-at-ucl/search-ucl-jobs/details?jobId=10338&jobTitle=Research%20Fellow%20in%20the%20Mathematics%20of%20Deep%20Learning
Informal enquires can be made to
Simon Arridge <s.arridge@ucl.ac.uk> or Bangti Jin <b.jin@ucl.ac.uk>
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From: noreply@iopscience.org
Subject: Inverse Problems, Volume 39, Number 6, June 2023
Sent: 28 May 2023

Inverse Problems June 2023 Volume 39 Number 6 Special Issue Articles
On an iteratively reweighted linesearch based algorithm for nonconvex composite optimization S Bonettini, D Pezzi, M Prato and S Rebegoldi

Localized ensemble Kalman inversion X T Tong and M Morzfeld

Precursors for synthetic aperture radar Natalie A Cartwright and Kaitlyn Muller 2023

Reconstructing the image scanning microscopy dataset: an inverse problem Alessandro Zunino, Marco Castello and Giuseppe Vicidomini

Dynamic Fourier ptychography with deep spatiotemporal priors
Pakshal Bohra, Thanh-an Pham, Yuxuan Long, Jaejun Yoo and Michael Unser

PatchNR: learning from very few images by patch normalizing flow regularization
Fabian Altekrüger, Alexander Denker, Paul Hagemann, Johannes Hertrich, Peter Maass and Gabriele Steidl

TRAC method in dissipative media—a first analysis in frequency domain and homogeneous media Marie Graff and Mina Cullen

Papers

Identification of acoustic point sources in a two-layered medium from multi-frequency sparse far field patterns
Xiaodong Liu and Qingxiang Shi

On uniqueness and stable estimation of multiple parameters in the Cahn–Hilliard equation Aaron Brunk, Herbert Egger and Oliver Habrich

A new nonconvex low-rank tensor approximation method with applications to hyperspectral images denoising
Zhihui Tu, Jian Lu, Hong Zhu, Huan Pan, Wenyu Hu, Qingtang Jiang and Zhaosong Lu

Co-inversion of a scattering cavity and its internal sources: uniqueness, decoupling and imaging Deyue Zhang, Yukun Guo, Yinglin Wang and Yan Chang

Heuristic rule for inexact Newton-Landweber iteration with convex penalty terms of nonlinear: ill- posed problems
Ruixue Gu, Zhenwu Fu, Bo Han and Hongsun Fu

Bayesian inversion of log-normal eikonal equations Zhan Fei Yeo and Viet Ha Hoang

Inverse problems of damped wave equations with Robin boundary conditions: an application to blood perfusion
Yan-Long Fang, Daniel Lesnic and Moataz Alosaimi

Maximum a posteriori estimators in ℓp are well-defined for diagonal Gaussian priors Ilja Klebanov and Philipp Wacker

Stochastic mirror descent method for linear ill-posed problems in Banach spaces Qinian Jin, Xiliang Lu and Liuying Zhang

Translation invariant diagonal frame decomposition of inverse problems and their regularization Simon Göppel, Jürgen Frikel and Markus Haltmeier

On uniqueness and ill-posedness for the deautoconvolution problem in the multi-dimensional case Bernd Hofmann, Frank Werner and Yu Deng

A new sampling indicator function for stable imaging of periodic scattering media Dinh-Liem Nguyen,

Kale Stahl and Trung Truong

Weighted Radon transforms of vector fields, with applications to magnetoacoustoelectric tomography
L Kunyansky, E McDugald and B Shearer

A general method for extracting the amplitude spectrum of the seismic wavelet from the seismic traces
Haoqi Zhao, Jinghuai Gao and Junxiong Jia

A Bayesian interpretation of the L-curve
Jérôme Antoni, Jérôme Idier and Sébastien Bourguignon

Inverse Problems, Volume 39, Number 6, June 2023, June 2023 - IOPscience

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IPNET DIGEST VOLUME 30, NUMBER 07 3 AUGUST 2023

Today's Editor: Matti Lassas University of Helsinki

Today's Topics:

Submissions for IPNet Digest: submit-ipnet@helsinki.fi

Information about IPNet: https://www.helsinki.fi/en/researchgroups/inverse-problems/ipnet-inverse-problems-network

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From: Ruming Zhang (zhang@math.tu-berlin.de)
Sent: Friday, 21 July, 2023
Subject: Doctoral Researcher Positions (100% TV-L E13), TU Berlin, Germany

We are currently seeking for an excellent Doctoral Researcher (m/f/d - 100%) at Technical University of Berlin. The doctoral research is expected to work in the field of Inverse Problems (research on numerical methods for inverse scattering problems in waveguides). The salary scale of this position is based on the wage agreement of the civil service in TV-L E13 (100%). The position is funded up to 5 years.

Requirements:
Completed university degree (Diplom, Master or equivalent) in Mathematics or a closely related course of studies. Knowledge in the field of numerical methods for partial differential equations, numerical methods for optimization problems, good coding skills (for example in matlab).
Excellent English language skills.

Please send your e-mail application with the reference number and the usual documents (cover letter, CV, certificates in one pdf file) to Prof.
Dr. Ruming Zhang (zhang@math.tu-berlin.de) before August 18, 2023.

https://www.jobs.tu-berlin.de/stellenausschreibungen/169538

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From: Andreas Alpers <awalpers@yahoo.de>
Sent: Friday, 21 July, 2023
Subject: Postdoc position in Mathematical Imaging/ Constrained Clustering at University of Liverpool, UK
Applications are invited for a 24-month EPSRC funded Postdoctoral Research Associate post at the Department of Mathematics, University of Liverpool, UK.
The position is funded by Dr Alpers' EPSRC New Investigator Award project “Optimal Grain Diagrams: Mathematical Analysis and Algorithms”. The Postdoctoral Research Associate will contribute to a programme of work that aims at enabling new materials discovery by advancing the theory and

computation of geometric diagram structures describing polycrystals by exploiting a recently established link to constrained clustering.
The applicant should have (or be about to obtain) a PhD in Mathematics, Mathematical Optimisation, Operations Research, Machine Learning, Computer Science, or any related area, the ability to pursue research independently and as part of a team, and a track record of high-quality original research. Computational skills and expertise in clustering and/or optimisation as well as interest in materials science applications would be advantageous.
Further information about the post and instructions on how to apply can be found at:
https://my.corehr.com/pls/ulivrecruit/erq_jobspec_version_4.display_form?p_company=1&p_internal_external=E&p_display_in_irish=N&p_process_type=&p_applicant_no=&p_form_profile_detail=&p_display_apply_ind=Y&p_refresh_search=Y&p_recruitment_id=062566
Informal enquires can be sent to Andreas Alpers at
andreas.alpers@liverpool.ac.uk<mailto:andreas.alpers@liverpool.ac.uk>.
Closing date: August 11, 2023
Start date: flexible (preferable autumn 2023)
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From: Matti Lassas, matti.lassas@helsinki.fi
Subject: ERC Funded Doctoral and Postdoc Positions in Mathematical Inverse Problems at the University of Helsinki
Applications are invited for two postdoctoral researchers and a doctoral student in mathematical inverse problems at the University of Helsinki. The position will be funded by the ERC advanced grant InversePDE - Geometric Methods in Inverse Problems for Partial Differential Equations and Centre of Excellence on Inverse Modelling and Imaging, led by Professor Matti Lassas.
The InversePDE project studies inverse problems for partial differential equations (PDEs) and geometric inverse problems. A typical inverse problem is the determination of the coefficient functions of a PDE from indirect data. The project aims to obtain unique solvability and stability results for inverse problems and to develop solution algorithms for these problems that are based on machine learning.The project will study inverse problems for linear and non-linear hyperbolic and elliptic PDEs by applying analysis, differential geometry, microlocal analysis, and probabilistic methods.
The project will also combine methods of machine learning, in particular neural networks, and manifold learning techniques, with the mathematical theory of inverse problems to invent new algorithms that are rigorously guaranteed to work. We are looking for postdoctoral researchers and doctoral students interested in working on inverse problems and their applications. We also welcome applications from postdoctoral researchers who have not earlier worked on the above topics but are interested in extending their expertise to new fields. Women and other underrepresented groups in the field of mathematics are strongly encouraged to apply.
Contract period and expected starting dates
Starting date for the graduate students position may be between November 1, 2023-August 1, 2024. Postdoctoral positions are for 2 years, with a possible extension to a 3rd year depending on performance and funding. The starting date for the first postdoctoral position may be in the period October 1, 2023- February 29, 2024. The starting date for the second position may be in the period January 1, 2024- September 1, 2024.
Application deadlines Postdoc: August 25, 2023 Doctoral Student: October 1, 2023
Salary and benefits
The starting salary of a PhD student is typically 2400 - 2800 euros/month, depending on previous qualifications and experience.The starting salary of a Postdoctoral Researcher is typically 3500 - 3800 euros/month, depending on previous qualifications and experience.

The University of Helsinki offers comprehensive services to its employees, including occupational health care and health insurance, sports facilities, and opportunities for professional development. The University provides support for internationally recruited employees with their transition to work and life in Finland. For more on the University of Helsinki as an employer, please see **https://www.helsinki.fi/en/about-us/careers**.
How to apply
The applicants should submit the following documents CV (max 2 pages) Cover letter detailing their familiarity with analysis of PDEs, geometry, together, and/or neural networks and other machine learning methods with their interest to study mathematical inverse problems (max 2 pages) Names and institutional email addresses of up to 3 references Please submit your documents using the University of Helsinki Recruitment System via the 'Apply Now' link on the call texts. Postdoctoral researcher **https://jobs.helsinki.fi/job/Postdoctoral-Researcher%252C-Mathematical-Inverse-Problems/774009902/**? Doctoral researcher **https://jobs.helsinki.fi/job/Doctoral-Researcher%252C-Mathematical-Inverse-Problems/774017702/?f** Applicants, who are employees of the University of Helsinki, are requested to leave their application by using the employee login.
The University of Helsinki seeks to promote an equitable and inclusive working environment and welcomes applicants of any gender, linguistic and cultural background, or minority group. Additional information For further enquiry related to the position, please contact Professor Matti Lassas (Matti.Lassas(at)helsinki.fi) If you need support with the recruitment system, please contact hr-kumpula(at)helsinki.fi.

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From: <noreply@iopscience.org>
Sent: Monday, 24 July, 2023
Subject: Inverse Problems, Volume 39, Number 8, August 2023

Special Issue Articles

Well-posedness of the stochastic time-fractional diffusion and wave equations and inverse random source problems
Matti Lassas, Zhiyuan Li and Zhidong Zhang

Variable projection methods for separable nonlinear inverse problems with general-form Tikhonov regularization
Malena I Español and Mirjeta

State estimation approach to dual-modal imaging of two-phase flow based on electromagnetic flow tomography and electrical tomography
M Ziaul Arif, Aku Seppänen and Marko Vauhkonen

Lagrangian approach and shape gradient for inverse problem of breaking line identification in solid: contact with adhesion
Victor A Kovtunenko

Papers

Fast iterative reconstruction for multi-spectral CT by a Schmidt orthogonal modification algorithm (SOMA)
Huiying Pan, Shusen Zhao, Weibin Zhang, Huitao Zhang and Xing

A novel quantitative inverse scattering scheme using interior resonant modes
Youzi He, Hongyu Liu and Xianchao Wang

Inverse problems for mean field games
Hongyu Liu, Chenchen Mou and Shen Zhang

Convergence analysis of critical point regularization with non-convex regularizers
Daniel Obmann and Markus Haltmeier

Dual gradient method for ill-posed problems using multiple repeated measurement data
Qinian Jin and Wei Wang

Hierarchical off-diagonal low-rank approximation of Hessians in inverse problems, with application to ice sheet model initialization
Tucker Hartland, Georg Stadler, Mauro Perego, Kim Liegeois and Noémi Petra

Series reversion for electrical impedance tomography with modeling errors *
H Garde, N Hyvönen and T Kuutela

Radon transform on algebraic Cormack α-curves inversion formula
T T Truong

A statistical framework for domain shape estimation in Stokes flows
Jeff Borggaard, Nathan E Glatt-Holtz and Justin Krometis

Lipschitz stability of recovering the conductivity from internal current densities
Lingyun Qiu and Siqin Zheng

Convergence analysis of an alternating direction method of multipliers for the identification of nonsmooth diffusion parameters with total variation
Y Ouakrim, I Boutaayamou, Y El Yazidi and A Zafrar

Inverse problems for constrained parabolic variational-hemivariational inequalities *
Stanisław Migórski, Dong-ling Cai and Yi-bin Xiao

Inverse Problems, Volume 39, Number 8, August 2023, August 2023 - IOPscience

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IPNET DIGEST VOLUME 30, NUMBER 08 28 AUGUST 2023

Today's Editor: Matti Lassas University of Helsinki

Today's Topics:

1. PhD position in computational inverse problems at LUT University
2. Table of contents (AIMS)
3. Table of contents

Submissions for IPNet Digest: submit-ipnet@helsinki.fi
Information about IPNet: https://www.helsinki.fi/en/researchgroups/inverse-problems/ipnet-inverse-problems-network
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From: Tapio Helin Tapio.Helin@lut.fi
Sent: Wednesday, 9 August, 2023
Subject: PhD position in computational inverse problems at LUT University

Dear all,

we have a fully funded doctoral student position in computational inverse problems open at LUT university. The position is connected to the Systems and Engineering Science Doctorate (SEED) programme, which is a European MSCA programme running from 2023 to 2028.

The thesis work is related to industrial collaboration with ABB Oy. The focus of the thesis is to identify and quantify uncertainty in the structural parameters of electrical motors by analyzing vibration signals from an electric motor. This mathematical problem falls within the field of inverse problems, specifically in relation to linear elasticity. The project will involve studying topics such as inverse problems, partial differential equations, and computational statistics.

The job is based in Lappeenranta. The doctoral student will be co-supervised by prof. Claudia Schillings (Freie Universität Berlin, Germany) and is expected to spend 10–12 months at the FU Berlin and 4–6 months at the ABB Oy during the doctoral studies.

Moreover, the candidate must fulfil the geographic mobility requirement. The SEED programme follows the general MSCA mobility requirement where the candidate may not have resided or carried out their main activity (work, studies, etc.) in Finland for more than 12 months in the 3 years immediately before the call deadline.

The application deadline is September 30th. Applications can be submitted via

https://lut.rekrytointi.com/paikat/index.php?jid=932&o=A_RJ

where also more information is available.

If you know any interested students, I would very much appreciate spreading the word.

Best, Tapio

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From: cdenton@aimsciences.org

Sent: Tuesday, 25 July, 2023
Subject: Table of Contents (AIMS**)**

IPI December 2023 Vol. 17, No. 6 articles:

Holography of geodesic flows, harmonizing metrics, and billiards' dynamics

Gabriel Katz

Stability of a one-dimensional inverse source scattering problem in a multi-layered medium

Yufei Zhang and Xiang Xu

A first-order Rician denoising and deblurring model

Wenli Yang, Zhongyi Huang and Wei Zhu

Image super-resolution with PCA reduced generalized Gaussian mixture models in materials science

Dang-Phuong-Lan Nguyen, Johannes Hertrich, Jean-Francois Aujol and Yannick Berthoumieu

Convex regularization in statistical inverse learning problems

Tatiana A. Bubba, Martin Burger, Tapio Helin and Luca Ratti

Deep-plug-and-play proximal Gauss-Newton method with applications to nonlinear, ill-posed inverse problems

Francesco Colibazzi, Damiana Lazzaro, Serena Morigi and Andrea Samoré

A Hadamard fractional total variation-Gaussian (HFTG) prior for Bayesian inverse problems

Li-Li Wang, Ming-Hui Ding and Guang-Hui Zheng

A framelet sparse reconstruction method for pansharpening with guaranteed convergence

Zhong-Cheng Wu, Ting-Zhu Huang, Liang-Jian Deng and Gemine Vivone

Pestov identities and X-ray tomography on manifolds of low regularity

Joonas Ilmavirta and Antti Kykkänen

Deterministic-statistical approach for an inverse acoustic source problem using multiple frequency limited aperture data

Yanfang Liu, Zhizhang Wu, Jiguang Sun and Zhiwen Zhang

Inverse Problems and Imaging (aimsciences.org)

Best regards,

Charley Denton

Communications Specialist

American Institute of Mathematical Sciences

Email: cdenton@aimsciences.org

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From: noreply@iopscience.org

Sent: Saturday, 26 August, 2023
Subject: Table of Contents

Special Issue Articles

Inverse problem for a nonlocal diffuse optical tomography equation

Philipp Zimmermann

Subsampling in ensemble Kalman inversion

Matei Hanu, Jonas Latz and Claudia Schillings

Bilevel inverse problems in neuromorphic imaging

Harbir Antil and David Sayre

Estimation of the cell membrane permeability for gas transport from surface pH measurements

A Bocchinfuso, D Calvetti and E Somersalo

papers

A combination of Kohn-Vogelius and DDM methods for a geometrical inverse problem

Slim Chaabane, Houssem Haddar and Rahma Jerbi

Stable reconstruction of simple Riemannian manifolds from unknown interior sources

Maarten V de Hoop, Joonas Ilmavirta, Matti Lassas and Teemu Saksala

A two-stage numerical approach for the sparse initial source identification of a diffusion–advection equation

Umberto Biccari, Yongcun Song, Xiaoming Yuan and Enrique Zuazua

Determining Lamé coefficients by the elastic Dirichlet-to-Neumann map on a Riemannian manifold

Xiaoming Tan and Genqian Liu

Semi-discrete Tikhonov regularization in RKHS with large randomly distributed noise

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An inverse problem for semilinear equations involving the fractional Laplacian

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Template-based CT reconstruction with optimal transport and total generalized variation

Yiming Gao, Zhengmeng Jin and Xu Li

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