From: "Inverse Problems Network (IPNet)" <ipnet@math.msu.edu> Subject: IPNet Digest: Volume 24, Number 01 Date: January 4, 2017 at 5:34:37 PM EST To: <ipnet@list.msu.edu> Volume 24, Number 01 IPNet Digest January 4, 2017 Today's Editor: Patricia (Patti) K. Lamm, Michigan State University Today's Topics: Conference: Inverse Problems from Theory to Application at IMA Research Associate: Math/Stat Analysis of Multimodal Clinical Imaging, U Cambridge Ph.D. Student: Multimodal Imaging Combining Diffuse Optics and Ultrasound, Cancer Postdoctoral Fellow: Institute for Mathematics of Information, Cambridge, UK Table of Contents: Nonlinear Analysis: Modelling and Control Submissions for IPNet Digest: Mail to ipnet-digest@math.msu.edu Information about IPNet: http://ipnet.math.msu.edu -----From: Pam Bye <Pam.Bye@ima.org.uk> Subject: IMA CONFERENCE ON INVERSE PROBLEMS FROM THEORY TO APPLICATION Date: December 2, 2016 IMA CONFERENCE ON INVERSE PROBLEMS FROM THEORY TO APPLICATION Tuesday 19 - Thursday 21 September 2017 Isaac Newton Institute, Cambridge, UK Charity Registration number 1017777 CALL FOR PAPERS An inverse problem denotes the task of computing an unknown physical quantity from indirect measurements. The corresponding forward problem maps the physical quantity to the measurements. In most realistic situations the solution of the inverse problem is challenging, complicated by incomplete and noisy measurements, as well as non-invertible forward operators which render the inverse problem ill-posed (that is lack of stability and/or uniqueness of solutions). Inverse problems appear in many practical applications in biology, medicine, weather forecasting, chemistry, engineering, physics, to name but a few, and their analysis and solution presents considerable challenges in mathematics and statistics. This conference will bring together mathematicians and statisticians, working on theoretical and numerical aspects of inverse problems, and engineers, physicists and other scientists, working on challenging inverse problem applications. We welcome industrial representatives, doctoral students, early career and established academics working in this field to attend.

Conference topics:

- Imaging
- Regularisation theory
- Statistical inverse problems
- Sampling
- Data assimilation
- Inverse problem applications

Call for Papers: Papers will be accepted for the conference based on a 300 word abstract for oral or poster presentation. Abstracts should be submitted by 30 April via https://my.ima.org.uk/

Please note that if you are an IMA Member or you have previously registered for an IMA conference, then you are already on our database. Please "request a new password" using the email address previously used to log in and make a submission.

Confirmed Invited Speakers Dr Marta M. Betcke (University College London) Professor Dan Crisan (Imperial College London) Professor Jari Kaipio (University of Auckland, New Zealand) Professor Dirk Lorenz (TU Braunschweig, Germany) Professor Bill Symes (Rice University) Dr Tanja Tarvainen (University of Eastern Finland)

Organising Committee Carola-Bibiane Schönlieb (University of Cambridge) - Chair Cristiana Sebu (University of Malta) - Co-chair Paul Ledger (Swansea University) Bill Lionheart (University of Manchester)

Scientific Committee Simon Arridge (University College London) Martin Burger (University of Münster) Daniela Calvetti (Case Western Reserve University) Paul Childs Barbara Kaltenbacher (University of Klagenfurt) Roland Potthast (University of Reading) Samuli Siltanen (University of Helsinki)

Further information For further information on this conference, please visit the conference webpage: http://ima.org.uk/conferences/conferences_calendar/inverse-problems.html

Contact information For general conference queries please contact Lizzi Lake, Conference Officer E-mail: conferences@ima.org.uk Tel: +44 (0) 1702 354 020 Institute of Mathematics and its Applications, Catherine Richards House, 16 Nelson Street, Southend-on-Sea, Essex, SS1 1EF, UK.

Submitted by: Pamela Bye, Conference Support Officer Institute of Mathematics and its Applications, Tel: 01702 354020

From: Carola-Bibiane Schönlieb <cbs31@cam.ac.uk> Subject: PostDoc position in Maths & Stats for Medical Imaging, Cambridge UK Date: December 9, 2016

We invite applications for at least one Post Doctoral Research Associate position to work in the EPSRC Centre for Mathematical and Statistical Analysis of Multimodal Clinical Imaging (CMIH) at the University of Cambridge.

The centre is a collaboration between mathematics, engineering, physics and biomedical scientists and clinicians, and aims to achieve synergies between applied mathematics and statistics through the focus on the analysis of clinical imaging, particularly that arising in neurological, cardiovascular and oncology imaging.

The research activity of the successful candidate will take place within one or more multidisciplinary projects joint between investigators within the centre. Preference will be given to applicants interested in working on projects involving Electronic Health Records and Imaging, joint reconstruction of multimodal imaging, dynamic image reconstruction and analysis, and/or image distortion correction. For further information concerning the types of project the centre is likely to undertake and a list of investigators, please visit www.cmih.maths.cam.ac.uk. The PDRAs will join a cohort of researchers in the mathematical and statistical analysis of clinical imaging who are already working in the centre.

Requirements: Applicants must have (or be about to receive) a PhD degree in mathematics or statistics (or closely related discipline). The ideal candidate will be experienced in one or more of the following areas: statistical imaging / statistical shape analysis, functional data analysis, spatial statistics, inverse problems, computational analysis, optimisation, variational methods in image processing, data science. Experience in parallel computing and C programming skills are desirable.

Contact: Informal inquiries can be made by contacting LF10840@maths.cam.ac.uk.

Applications: Applications should be made at the following website where a number of postdoctoral positions across the faculty can be applied for – https://postdoc.maths.cam.ac.uk/

Application deadline is the 10th of January 2017.

Limit of tenure: 2 years.

The University values diversity and is committed to equality of opportunity. The University has a responsibility to ensure that all employees are eligible to live and

work in the UK.

From: Simon ARRIDGE <sarridge@googlemail.com>
Subject: PhD position available
Date: December 22, 2016

Title : SOLUS (Smart OpticaL and UltraSound diagnostics of breast cancer

Summary :

This project is part of the EC funded SOLUS project to develop a multimodal imaging system combining diffuse optics and ultrasound for improved diagnosis of breast cancer. The PhD student will develop models of time-of-flight light propagation in tissue and inverse solutions for identifying and characterising breast cancer lesions with improved specificity by exploiting simultaneous acquisition of ultrasound images. The position will suit a Physicist, Applied Mathematician or Engineer with experience of computational models and inverse problems

Further Details :

The SOLUS (Smart OpticaL and UltraSound diagnostics of breast cancer) project will develop an innovative multi-modal tomographic system combining diffuse optical tomography and ultrasound/shear wave elastography to support the in vivo diagnosis of breast cancer, a major age and life-style related disease. The multi-modal system aims at the classification of breast lesions after a positive screening, with special focus on improving the discrimination of lesions that are borderline between benign and malignant (BI-RADS 3 vs. 4a) and presently undergo screening evaluation with high false positive rate.

The project's overall objective will be achieved by building on the multidisciplinary experience of the consortium and exploiting innovative photonics concepts and components concerning the time domain small source-detector distance approach to optical tomography and the high dynamic range time-gated detection approach. This will allow achieving unprecedented sensitivity, spatial resolution, and depth penetration, thus providing effective diagnostic information on tissue composition and functional blood parameters to complement clinical ultrasounds (USs) and shear wave elastography (SWE).

The overall project combines academic groups in the UK, Italy and France with industrial electronics and photonics expertise in France, Italy and Germany. The PhD student at UCL will develop mathematical and computational models for light propagation in tissue and methods for image reconstruction for the multimodality Ultrasound/Optical probe being developed by partners in the project. The ideal student will have expertise in Applied Mathematics or Theoretical Physics and strong programming skills for large scale numerical modelling problems.

- Supervisor : Professor Simon Arridge - Deadline for applications : 31-Jan-2017

- Application link : https://www.prism.ucl.ac.uk/#!/?project=214 - Start date : (to be decided, ideally as soon as possible).

From: Carola-Bibiane Schönlieb <cbs31@cam.ac.uk> Subject: Postdoctoral Research Fellowships in the Mathematics of Information, Cambridge, UK Date: December 7, 2016

We are pleased to advertise three positions for Postdoctoral Research Fellows affiliated with the new Cantab Capital Institute for the Mathematics of Information (CCIMI, http://www.ccimi.maths.cam.ac.uk). The Fellow will be free to pursue independent research related to fundamental mathematical problems and methodology for understanding, analysing, processing and simulating data. The Fellowship is available for three years. Appointment will be made at an appropriate point on the University's Postdoctoral Research Associate scale or the Senior Research Associate scale as appropriate. The Fellow will also receive an annual allowance for research expenses.

Applicants should have a PhD in Mathematics, Statistics or closely related discipline before commencing the Fellowship. Senior Research Associates will have commensurately more experience, including at least three years postdoctoral experience.

Duties would include developing and conducting individual and collaborative research objectives, proposals and projects. The role holder will be expected to plan and manage their own research and administration, with guidance if required, and to assist in the preparation of proposals and applications to external bodies. You must be able to communicate material of a technical nature and be able to build internal and external contacts. You may be asked to assist in the supervision of student projects, the development of student research skills, provide instruction or plan/deliver seminars relating to the research area of the CCIMI.

To apply online for this vacancy, and to find out further information, please visit http://www.jobs.cam.ac.uk/job/12244/.

The closing date for applications is the 10th of January 2017.

Informal enquiries about the positions may be made to: LE08394@maths.cam.ac.uk

The University of Cambridge values diversity and is committed to equality of opportunity. The Department would particularly welcome applications from women, since women are, and have historically been, underrepresented on our research staff.

The University has a responsibility to ensure that all employees are eligible to live and work in the UK.

From: Romas Baronas <romas.baronas@mif.vu.lt>
Subject: Table of Contents, Nonlinear Analysis: Modelling and Control 22:1

Date: December 6, 2016

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Bifurcation analysis for a singular differential system with two parameters via to topological degree theory Lishan Liu, Fenglong Sun, Xinguang Zhang, Yonghong Wu

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Stability analyses of deterministic and stochastic SEIRI epidemic models with nonlinear incidence rates and distributed delay Hong Zhang, Juan Xia, Paul Georgescu

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Investigation of symmetric non-spherical particle shapes by applying low-resolution spherical harmonics Urte Radvilaite, Rimantas Kacianauskas, Dainius Rusakevicius

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A free on-line edition is available at: http://www.mii.lt/NA/ ----- end ------