Inverse Problems Workshop Series I

Thursday October 16, 2003

1:00 *seg1|Deconvolution and Related Inverse Problems in the Physical Sciences*

8:30–9:00 *Check-In/Light Breakfast (Hosted by IPAM)*

9:00–10:00 **David Colton** (University of Delaware)
Tutorial: The Direct Scattering Problem for an Infinite Cylinder

10:00–10:30 *Break*

10:30–12:00 **Mario Bertero** (Univ of Genova, Italy)
Tutorial: Image deconvolution

12:00–2:00 *Lunch (on your own)*

2:00–2:10 *Welcome and Opening Remarks*

2:10–3:10 **Pierre Sabatier** (Université de Montpellier II)
What did we learn and still may learn from Inverse Scattering?

3:10–3:40 *Break*

3:40–4:40 **David Colton** (University of Delaware)
Inverse Scattering Problems for Electromagnetic Waves

4:40–5:40 **Robert Anderssen** (CSIRO, Australia)
Inverse Problems in Rheology - Rheological Implications of Completely Monotone Fading Memory

5:45–7:00 *Wine/Cheese Reception (Hosted by IPAM)*

Friday October 17, 2003

1:00 *seg1|Deconvolution and Related Inverse Problems in the Physical Sciences*

8:30–9:00 *Continental Breakfast*

9:00–10:00 **Kuo-Nan Liou** (UCLA)
Remote Sensing of Three-Dimensional and Inhomogeneous Cirrus Clouds in the Earth's Atmosphere

10:00–10:30 *Break*

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10:30–11:30 **Moustafa T. Chahine** (Jet Propulsion Laboratory)
Inverse problems in remote sensing of planetary atmospheres

11:30–12:30 **Willi Freeden** (Universitaet Kaiserslautern)
Inverse Problems in Geosciences: Regularization of Satellite Data by Multisresolution Analysis

12:30–2:30 *Lunch (on your own)*

2:30–3:30 **Keith Hege** (MKS Imaging Technology, LLC)
Indirect imaging problems in astronomy and surveillance

3:30–4:00 *Break*

4:00–5:00 **Charles Matson** (USAF/Kirtland)
Diffraction tomography and blind deconvolution for imaging in turbid media

Saturday October 18, 2003

1:00 *seg1|Deconvolution and Related Inverse Problems in the Physical Sciences*

8:30–9:00 *Continental Breakfast*

9:00–10:00 **Jose-Angel Conchello** (Oklahoma Medical Research Foundation)
What's wrong with this picture? An overview of inverse methods for three-dimensional microscopy

10:00–10:30 *Break*

10:30–11:30 **Edward Pike** (King's College, London)
Inverse problems in laser scanning microscopy and optical digital storage discs

11:30–12:30 **Sylvain Baillet** (Cognitive Neuroscience & Brain Imaging Laboratory)
Exploring brain functions with high-temporal resolution: models and methods in electromagnetic brain imaging

12:30–12:00 *Conclusion*

Monday October 20, 2003

1:00 *seg2|Emerging Applications of Inverse Problems Techniques to Imaging Science*

8:30–9:00 *Check-In/Light Breakfast (Hosted by IPAM)*

9:00–10:00 **Yoram Bresler** (University of Illinois at Urbana-Champaign)
Fast Hierarchical Algorithms for Tomography

10:00–10:30 *Break*

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10:30–11:30 **Oliver Dorn** (Universidad Carlos III de Madrid)
On the use of level sets for two selected inverse problems

11:30–12:30 **Marc Droske** (University Duisburg)
A Variational Approach to non-rigid morphological image registration

12:30–2:00 *Lunch (on your own)*

2:00–3:00 **Alexander Katsevich** (University of Central Florida)
Efficient image reconstruction in cone beam tomography

3:00–4:00 **Haomin Zhou** (Georgia Institute of Technology)
Variational PDE Techniques in Wavelet Based Image Compression

4:00–4:30 *Break*

4:30–5:30 **Brent Ellerbroek** (National Optical Astronomical Observatory)
Applications of Linear Inverse Problem Techniques to Real-Time Adaptive Optics

Tuesday October 21, 2003

1:00 *seg2|Emerging Applications of Inverse Problems Techniques to Imaging Science*

8:30–9:00 *Continental Breakfast*

9:00–10:00 **Sudhakar Prasad** (University of New Mexico)
Phase Diverse Speckle Imaging and Information Based Optimization

10:00–10:30 *Break*

10:30–11:30 **David Tyler** (University of Arizona)
The use of angular support and adaptive optics phase information in image deconvolution

11:30–12:30 **Otmar Scherzer** (University of Innsbruck)
Denoising methods for imaging

12:30–2:00 *Lunch (on your own)*

2:00–3:00 **Tony Chan** (UCLA)
Geometric and Total Variation Regularization for Imaging and Tomography Problems

3:00–4:00 **John Schotland** (University of Pennsylvania)
Inverse Scattering and the Optical Theorem

4:00–4:30 *Break*

4:30–5:30 **Robert Plemmons** (Wake Forest University)
Integrated Optical-Digital Approach for Enhancing Image Restoration

5:30–7:00 *Dinner (Hosted by IPAM)*

Wednesday October 22, 2003

1:00 *seg3|Inverse Problems in the Life Sciences*

8:30–9:00 *Check-In/Light Breakfast (Hosted by IPAM)*

9:00–9:40 **Peter Schuster** (University of Vienna)
Inverse folding and sequence structure maps of ribonucleic acids (RNA)

9:40–10:20 **Patrice Koehl** (Stanford University)
The Inverse Protein Folding Problem

10:20–10:50 *Break*

10:50–11:30 **Garry Odell** (University of Washington)
The points set in high-dimensional parameter space for which a genetic network works is vast. Finding/describing it is a hard inverse problem.

11:30–1:30 *Lunch (Hosted by IPAM)*

1:30–2:10 **Oscar Bruno** (California Institute of Technology)
The inverse scattering problem for optical coherence tomography

2:10–2:50 **Joyce McLaughlin** (Rensselaer Polytechnic Institute)
Creating images of shearwave speed variations in tissue using inverse problems methods

2:50–3:20 *Break*

3:20–4:00 **Todd Yeates** (UCLA)
An introduction to the phase retrieval problem in protein crystallography

4:00–4:40 **Niles Pierce** (California Institute of Technology)
Paradigms for Computational Nucleic Acid Design

Thursday October 23, 2003

1:00 *seg3|Inverse Problems in the Life Sciences*

8:30–9:00 *Continental Breakfast*

9:00–9:40 **Lisa J. Fauci** (Tulane University)
Integrative models of microorganism motility: what does a ciliary beat say about the cilium?

9:40–10:20 **Liliana Ironi** (IMATI, Italy)
A hybrid approach to nonlinear metabolic system identification: a case study

10:20–10:50 *Break*

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10:50–11:30 **Peter Deuflhard** (Freie Universitat, Berlin)
Robust Perron Cluster Analysis in Conformation Dynamics

11:30–1:30 *Lunch (on your own)*

1:30–2:10 **Steve Cox** (Rice University)
Eavesdropping on Synaptic Traffic

2:10–2:50 **Scott Makeig** (University of California at San Diego)
Statistical approaches to EEG source inversion.

2:50–3:20 *Break*

3:20–4:00 **Vincenzo Capasso** (University of Milan)
ON THE SOCIAL BEHAVIOUR OF BIOLOGICAL POPULATIONS

4:00–4:40 **Robert Eisenberg** (Rush University)
Studying Ion Channels as an Inverse Problem

4:40–5:00 *Conclusion*