PreConference program

Sunday, June 10, 2012 Tutorial-Room 103AB

Tutorial: Inverse Heat Conduction Problem
15:00-15:50 Keith Woodbury, Professor, Alabama State University: Introduction to IHCP
15:50-16:00 Break
16:00-17:10 James V. Beck, Emeritus Professor, Michigan State University: IHCP methods and Filter Concepts

Dinner on your own
Sponsors:
Monday, June 11, 2012

8:00  CONTINENTAL BREAKFAST-KELLOGG CENTER--Room 101
8:30  Greetings, Leo Kempel, Associate Dean for Research, College of Engineering, Michigan State University

8:40  Keynote Speaker, Daniel Inman, Department Chair, Aerospace Engineering, University of Michigan: “Structural Health Monitoring, Control, and Inverse Problems”

The MSU College of Engineering Session 1, Room 103AB: Regularization
  Co-Chairs: Cara Brooks and Bernd Hofmann

9:25  The Effects of Measurement Errors on the Derivative Regularization Method
      Robert L. McMasters

9:45  Regularization of an autoconvolution problem with applications in laser optics
      Bernd Hofmann

10:05 Maximum product criterion as Tikhonov parameter choice-rule for Kirsch’s factorization method
      George Pelekanos

10:25  BREAK

The Beacon Session 2, Room 103AB: Heat Transfer and the Inverse Heat Conduction Problem
  Co-Chairs: Jon Woolley and Bob McMasters

10:40  Heat Transfer Coefficient Characterization in Hot Stamping of Boron Steel
      Etienne Caron, Kyle J. Daun and Mary A. Wells

11:00  Data Filtering Techniques Applied to the Solution of the Inverse Heat Conduction Problem
      Fabio Bozzoli and Sara Rainieri

11:20  Reconstruction of the heat transfer coefficient for the free surface liquid jet impingement.
      Arkadiusz Ryfa and Ryszard A. Bialecki

11:40  IHC Application to High Energy Laser Heating
      Jonathan Woolley

12:00  LUNCH-KELLOGG CENTER--RED CEDAR B

The Mathworks Session 3, Room 103AB: Computational Methods
  Co-Chairs: Ryka Arkadiusz and Nilson Roberty

13:00  Inverse Problem on Battery Modeling Using MATLAB
      Javier Gazzarri, MathWorks

13:50  Using HEEDS Optimization Software
      Marcus Rademacher, Red Cedar Technology

14:02  Software Tools for Inverse Problem Solution
      S. Sivasuthan and S. R. H. Hoole

14:22  BREAK

The USDA Session 4, Room 103AB: Controls, Non-Destructive Evaluation, Tomography
  Co-Chairs: Lalita Udpa and S. Diop

14:37  Optimal Beam Configuration for Laser Absorption Spectroscopy Tomography
      M. G. Twynstra, K. J. Daun, and G. Guerette

14:57  Efficient Computational Methods for Thermal Imaging of Small Cracks in Plates
      Kurt Bryan

15:17  On the ill-posedness of observation Problems
      S. Diop

15:37  Image reconstruction from highly limited-angle diffraction tomography by application of total variation minimization and data redundancy techniques
      P. R. Paladhi, J. Klaser, and L. Udpa

15:57  Diagnostic Solvers for Linear Systems with Constraints
      Rondall Jones and Kevin Dowding
16:17-17:30  
The Red Cedar Technology Poster Session, Room 101  
Session Chair: Brian Feeny

1. Two-scale hybrid mixture based modeling of transport processes during frying of rice crackers  
Harkirat S. Bansal, Jirawan Maneerote, and Pawan S. Takhar

2. Uncertainty Estimations and Validation of a Universal Salmonella Thermal Inactivation Model for Ground-and Whole-Muscle Meat and Poultry Products  
M.I. Tenorio-Bernal, B.P. Marks, and K.D. Dolan

3. Quantifying parametric variations using sensitivity vector fields  
Andrew Sloboda and Bogdan Epureanu

4. Simultaneous estimation of temperature-dependent thermal properties via neural networks  
Balázs Czél, Keith A. Woodbury and Gyula Gróf

5. Moving heat source reconstruction in a cartesian coordinates domain  
Nilson C. Roberty, Denis M de Sousa and Marcelo L.S. Rainha

6. Use of Transfer Function Concept based on Analytical Solutions for Solving Inverse Heat Conduction Problem  
A.P. Fernandes, M.B. dos Santos, and G. Guimaraes

7. Simultaneous Iterative Reconstruction Techniques for Computerized Tomography on GPU  
Junjun Xin, Chuck Bardel, Dirk Colbry, Lalita Udpa, and Satish Udpa

8. Estimation of Thermal Properties and anthocyanin retention in cherry pomace at different moisture contents during non-isothermal heating  
Ibrahim Greiby, Dharmendra Mishra, and Kirk Dolan

9. Parameter estimation for dynamic microbial inactivation: which model, which precision?  
K.D. Dolan, V.P. Valdramidis, and D.K. Mishra

10. Estimation of river characteristics from remote sensing data.  
Thomas Almeida and F. Jaberi

18:30 Reception--RED CEDAR A & B  
19:00 SYMPOSIUM BANQUET--KELLOGG CENTER RED CEDAR A & B

20:00 Banquet Speaker: Satish Udpa, University Distinguished Professor, Dean of College of Engineering, Michigan State University
Tuesday, June 12, 2012

8:00  
CONTINENTAL BREAKFAST--KELLOGG CENTER-ROOM 101

8:30  **Keynote Speaker**, Jay Frankel, Professor, Mechanical, Aerospace and Biomedical Engineering Department, U. of Tennessee **“Surface Heat Flux Prediction Through Physics-Based Calibration”**

The **MSU Department of Probability and Statistics** Session 5, Room 103AB: Methods of Regularization
Co-Chairs: Nao Mimoto and Leonardo Borges

9:15 **Hybrid Samplers for Ill-posed Inverse Problems** Radu Herbei
9:35 **On Convergence Rates for Preconditioned iteratively regularized Gauss-Newton Schemes with Application to biomedical Imaging** Alexandra Smirnova and Anatoly Bakushinsky
9:55 **Extension of GKB-FP algorithm to multiple parameter Tikhonov Regularization** Leonardo S. Borges and Fermín S. V. Bazan

10:15 **On gradient domain regularization methods for image processing problems**
V. B. Surya Prasath

10:35  
**BREAK**

The **MSU Dept. of Mechanical Engineering** Session 6, Room 103AB: Parameter Estimation and Mechanics
Co-Chairs: Keith Woodbury and Kevin Cole

10:55 **Estimation of the Complex Shear Wave Speed in a Thick Plate** Andrew Hull and Benjamin Cray
11:15 **Random-walk modeling of an organic solar cell and the challenges of parameter estimation**
Kevin Cole
11:35 **Determination of Thermophysical Properties from a Flash Test using Genetic Algorithms** Keith Woodbury
11:55 **Estimation of Pendulum motion in Centrifugal Pendulum Vibration Absorbers** Abhishek Jain, S.W. Shaw, and B.F. Feeny

12:15  
LUNCH--KELLOGG CENTER-RED CEDAR B

The **Nestlé** Session 7, Room 103AB Mathematical and Statistical Aspects Related to the IHCP
Co-Chairs: Ashley Emery and Filippo de Monte

13:15 **Estimating Temperature Dependent Properties using POD and Bayesian Inference**
Ashley Emery
14:35 **Genetic Algorithm: The Search for Current Sources giving Desired Temperature Profiles**
V.U. Karthik and S. R. H. Hoole
14:55 **Inverse Heat Conduction Using Numerical Green’s Function Equation** F. De Monte and J.V. Beck

15:15  
**BREAK**

The **NanoGenesis** Session 8, Room 103AB Biology and Medicine
Co-Chairs: Lorraine Olson and Dharmendra Mishra

15:30 **An Inverse Problem Approach to Stiffness Mapping for Early Detection of Breast Cancer** Lorraine G. Olson
15:50 **Parameter Correlation in Models of Hyperthermic Cell Death** Neil Wright
16:10 **Effect of Amylose Content on Sequentially Estimated Kinetic Parameters for a Starch Viscosity Model** R. Sulaiman and K.D. Dolan

16:30  
Closing Comments and Announcement of IPS 2013