

CMMSE 2007 Meeting Timetable

Engineering 1 Building, Illinois Institute of Technology

Wednesday, June 20			
Crawford Auditorium (Rm. 104)			
08:00-12:30	Registration, IIT Engineering 1 Building		
09:10-09:30	Opening Remarks: F.R. (Buck) McMorris, Dean, IIT College of Science and Letters		
09:30-10:30	Plenary Talk: Erkki J. Brändas <i>The Jordan Form and Its Use in Chemical Physics and Physical Chemistry</i> Chair: Regino Criado		
	Crawford Auditorium (Rm. 104)	Room 106	Room 102
	High Performance Computing for Biological Modeling and Simulations Chair: Enrique Arias Antúnez	Computational Science Education Chair: Richard Martin	Numerical Solution of ODEs Chair: Higinio Ramos
10:30-11:00	Dexuan Xie <i>Parallel Numerical Solution for 1D Model of Blood-Tissue Transport and Metabolism</i>	Mohammad Siddique <i>MAPLE Animation Capabilities & Teaching Mathematics</i>	Rajesh K. Bawa <i>Robust Computational Techniques For Global Solution Flux and Normalized of Singularly Perturbed Reaction-Diffusion Problems</i>
11:00-11:30	Refreshments		
11:30-12:00	Yuanbei Deng <i>On the Optimal Approximation Solution for the Symmetric Procrustes Problem of the Linear Matrix Equation $AXB = C$</i>	Éva Simon <i>Electron Density Analysis and Application of the Nuclear Charge Variational Theorem for a Series of Novel Boron-Nitrogen Nano-Needles</i>	Ramón Escobedo <i>A CFL-like Constraint for the Fast Marching Method in Nonhomogeneous Nonhomogeneous Chemical Problems</i>
	High Performance Computing for Biological Modeling and Simulations Chair: Enrique Arias Antúnez	Computational Science Education Chair: Bruce A. Wade	Numerical Solution of ODEs Chair: Higinio Ramos
12:00-12:30	Yunkai Zhou <i>Filtering Techniques in Density Functional Theory Calculations</i>	Richard Martin <i>Undergraduate Computational Physics Education: Coming of Age?</i>	Rajesh K. Bawa & Srinivasan Natesan <i>Second-Order Uniformly Convergent Scheme for Singularly Perturbed Convection-Diffusion Problems</i>
12:30-14:45	Lunch		
14:45-15:45	Plenary Talk: Joseph Pasciak <i>Analysis of the PML Method Applied to Scattering Problems and the Computation of Resonances in Open Systems</i> Chair: Dexuan Xie		
	High Performance Computing for Biological Modeling and Simulations Chair: Greg Fasshauer	General Session Chair: Jesús Martín Vaquero	Industrial Mathematics Chair: Istvan Lauko
15:45-16:15	Dexuan Xie <i>New Parallel Symmetric SOR Preconditioners by Multi-Type Partitioning</i>	Rajiv Sharma <i>Computing Solutions of Systems of Nonlinear Polynomial Inequalities and Equations</i>	David M. Bortz <i>Model Selection in Mathematical Biology</i>
16:15-16:45	Refreshments		
	Algorithms and Computation Chair: Fred Hickernell	General Session Chair: Jesús Martín Vaquero	Industrial Mathematics Chair: Istvan Lauko
16:45-17:15	Regino Criado <i>Optimal Design of Robust and Efficient Complex Networks</i>	Shahadat Hossain <i>A New Data Structure for Multiplying a Sparse Matrix with a Dense Vector</i>	Sava Dediu <i>Generalized Sensitivity Functions and their uses in Inverse Problems</i>
17:15-17:45	Jorge Marco Blanco <i>Third order Analysis of Efficiency and Improvement for Barabási-Albert Networks</i>	Zachariah Sinkala <i>Mathematical Modeling of Enzymatic Transition States</i>	John A. Burns <i>Upwind Approximations for LQR Optimal Control</i>
	General Session Chair: Bruce A. Wade	General Session Chair: Jesús Martín Vaquero	Industrial Mathematics Chair: John Singler
17:45-18:15	Enrique Arias Antúnez <i>A Mathematical Model of the Static Pantograph/Catenary Interaction</i>	Harihar Khanal <i>Numerical Simulation of Turbulent Shear Flows over a Third order Stokes Wave</i>	Istvan Lauko <i>Simulation and Parameter Study of Embryo Transfer</i>
18:30-21:30	Reception: Lobby of Engineering E1 Building, IIT Campus. Everyone Welcomed!		

Thursday June 21

	Crawford Auditorium (Rm. 104)		
09:15-10:15	Plenary Talk: H.T. Banks <i>Phenomenological to Molecular Modelling of Viscoelastic Polymers: Elastomers to Biotissue</i> Chair: Greg Fasshauer		
	Crawford Auditorium (Rm. 104)	Room 106	Room 102
	Industrial Mathematics Chair: John Burns	Financial Mathematics & Engineering Chair: Abdul Q.M. Khaliq	Novel Finite Difference and Hybrid Methods for Differential Equations and Integral Problems Chair: John Davis
10:15-10:45	John Singler <i>LQG Balanced POD for Distributed Parameter Systems</i>	Anita Mayo <i>On the Numerical Evaluation of Option Prices in the Variance Gamma Model</i>	Hassan Taheri <i>A Hybrid of the Restarted Arnoldi and Electromagnetism Meta-Heuristic Methods for Calculating Eigenvalues and Eigenvectors of a Non-symmetric Matrix</i>
10:45-11:15	Refreshments		
11:15-11:45	Jeff Borggaard <i>Reduced-Order Modeling for Nonlinear Distributed Parameter Systems</i>	Tomasz Bielecki <i>Variations on the CDS Theme</i>	James Rogers <i>An Adaptive Computational Space Method for the Paraxial Model of Light Propagation through an Interface</i>
11:45-12:15	Shuhua Hu <i>Modeling and Numerical Simulating of Shrimp Biomass and Vaccine Production System</i>	Michael Kelly <i>A Theory of Non-Gaussian Option Pricing</i>	Peter Powers <i>Modeling and Validation of Multiple-stage Nonlinear Interactions</i>
12:15-14:15	Lunch		
14:15-15:15	Plenary Talk: George Papanicolaou <i>Multiscale Computing and Homogenization</i> Chair: Anita Mayo		
15:15-16:15	Refreshments & Poster Session, Engineering 1 Building, Room 103 Brandon Beevan: <i>Applications of the Fourier Transform in Imaging</i> Rafael Gallego: <i>Iterative Refinement for Neville Elimination</i> Paulino José García Nieto: <i>Non-linear Analysis of Cable Networks by FEM and Experimental Validation</i> Britta Janssen: <i>Linearly-Implicit Methods applied to a Chemotaxis Model</i> Abdul Q.M. Khaliq & Wenyuan Liao: <i>High Order Compact Finite Difference Scheme for Solving Nonlinear Black-Scholes Equation with Transaction Costs</i> Michael McCourt: <i>Radial Basis Interpolation & Regression</i> Higinio Ramos: <i>Mathematical Tools for Studying Geophysical Data. An Application to the Study of Crustal</i> Tommy Rogers & William Triplett: <i>Segmentation of Medical and Radar Images</i> Pedro Suárez: <i>An Optimization Problem in Deregulated Electricity Markets Solved with the Nonsmooth Maximum Principle</i> Yin Wang: <i>SVD Stabilized Block Diagonal Preconditioner for Large Scale Dense Complex Linear Systems in Electromagnetics</i>		
	Industrial Mathematics Chair: H.T. Banks	Financial Mathematics & Engineering Chair: Thomas Bielecki	Novel Finite Difference and Hybrid Methods for Differential Equations and Integral Problems Chair: John Davis
16:15-16:45	E.M. Cliff <i>Thermal Transients in Radiative Cooling of an Inflated Longeron</i>	Max Melnikov <i>Black-Scholes Equation: Green's Function Solution for Terminal-Boundary Value Problems</i>	Glen Gillen <i>Vector Diffraction Theory of Refraction of Light by a Spherical Surface – A Computational and Experimental Approach</i>
16:45-17:15	Lizette Zietsman <i>Mesh Independence for PDE Riccati Equations</i>	Michael Marozzi <i>Asian Options as Ultradiffusion Processes</i>	Qin Sheng <i>Approximations of Hybrid Dynamic Derivatives on Time Scales in Adaptive Computations</i>
17:15-17:45	José M. Matías <i>Functional Support Vector Machines and Generalized Linear Models for Glacier Geomorphology Analysis</i>	Sergio Adriani David <i>Investigation about Fractional Calculus in Financial Markets</i>	Suely Oliviera <i>Algebraic Approaches for H-Matrix Preconditioners</i>
19:30 – 20:30 & 20:30 – 22:00	Banquet (Ticket Required.): 1 hour open bar, 1.5 hours dinner; Homewood Suites by Hilton, 40 East Grand Avenue. Take the RED LINE 'EL' (North from IIT), Exit GRAND AVE, walk 1/2 Block East on Grand Ave.		

Friday June 22

	Crawford Auditorium (Rm. 104)		
09:15-10:15	Plenary Talk: Peter Forsyth <i>A Numerical Scheme for Pricing Guaranteed Minimum Withdrawal Benefit (GMWB) Variable Annuities</i> Chair: Abdul Q.M. Khaliq		
	Crawford Auditorium (Rm. 104)	Room 106	Room 102
	Approximation in High Dimensions Chair: Abdul Q.M. Khaliq	Novel Finite Difference and Hybrid Methods for Differential Equations and Integral Problems Chair: Qin Sheng	Numerical Solution of ODEs Chair: Rajesh K. Bawa
10:15-10:45	Fred Hickernell <i>Energy and Discrepancy as Criteria for Designs for Numerical Computation (I)</i>	Alice Ramos <i>Introduction to Time Scales System Control</i>	Higinio Ramos & Jesús Vigo Aguiar <i>An Improved Nonlinear Algorithm Appropriate for Solving Special Initial-Value Problems of the Form $y' = f(y)$</i>
10:45-11:15	Refreshments		
11:15-11:45	Steven Damelin <i>Energy and Discrepancy as Criteria for Designs for Numerical Computation (II)</i>	John Davis <i>A Linear Feedback Control Theorem on Time Scales: The Nabla Case</i>	Jesús Martín Vaquero <i>Exponential Fitted Runge-Kutta Methods of Collocation Type Based on Gauss, Radau and Lobatto Traditional Methods</i>
11:45-12:15	Xiaoyan Zeng <i>A New Quadrature Using Integration Lattices</i>	Kirk Bolton & Ben Allen <i>Experimental Investigation of a Time Scales Linear Feedback Control Theorem</i>	Samuel Jator <i>Solving Stiff Second order Initial Value Problems Directly by Backward Differentiation Formulas</i>
12:15-14:15	Lunch		
14:15-15:15	Plenary Talk: Yi Jiang <i>Multiscale Modeling of Tumor Development</i> Chair: Zachariah Sinkala		
	Approximation in High Dimensions Chair: Steven Damelin	Novel Finite Difference and Hybrid Methods for Differential Equations and Integral Problems Chair: Qin Sheng	Numerical Solution of ODEs Chair: Higinio Ramos
15:15-15:45	Ben Niu <i>Functional Quantization Method using Low Discrepancy Points with Application to Option Pricing</i>	Billy Jackson <i>A Linear Feedback Control Theorem on Time Scales: The Delta Case</i>	Mohan K Kadalbajoo <i>A Parameter Uniform B-Spline Collocation Method for Solving Singularly Perturbed Turning Point Problems having Twin Boundary Layers</i>
	Approximation in High Dimensions Chair: Steven Damelin	Novel Finite Difference and Hybrid Methods for Differential Equations and Integral Problems Chair: Qin Sheng	General Session Chair: Higinio Ramos
15:45-16:15	Rochelle Randall <i>Hyperinterpolation on Spheres</i>	Ian Gravagne <i>High-Gain Adaptive Feedback Control on Time Scales</i>	Younis Zaidan <i>Well-Posedness of Maxwell-Systems in Nonlinear Dielectric Media</i>
16:15-16:45	Refreshments		
	Approximation in High Dimensions Chair: Fred Hickernell	Novel Finite Difference and Hybrid Methods for Differential Equations and Integral Problems Chair: John Davis	High Performance Computing for Biological Modeling and Simulations Chair: Dexuan Xie
16:45-17:15	Jack Zhang <i>Preconditioning of Radial Basis Function Interpolation Systems via Accelerated Iterated Approximate Moving Least Squares</i>	Robert Marks <i>Graininess and State Autoregression using Time Scales</i>	Ning Cao <i>Computing White Matter Fiber Orientations using BiGaussian Model in High Angular Resolution Diffusion-Weighted MRI</i>
17:15-17:45	John Erickson <i>Generalized Native Spaces</i>	Michael Smiley <i>A Monotone Conservative Eulerian-Lagrangian Scheme for Reaction-diffusion-convection Equations Modeling Chemotaxis</i>	Xuwei Liang <i>Quantitative Diffusion Tensor Imaging Tractography Measures along Geodesic Distances in Amnesic Mild Cognitive Impairment</i>
	General Session Chair: Istvan Lauko	Novel Finite Difference and Hybrid Methods for Differential Equations and Integral Problems Chair: John Davis	General Session Chair: Mohammad Siddique
17:45-18:15	Surendra Gupta <i>A Transhipment Problem with Random Demands</i>	Shekhar Guha <i>Highly Accurate Modeling and Computations in Beam Propagations</i>	Tatiana Levitina <i>Sampling with Prolates</i>

CMMSE 2007 & Midwest Numerical Analysis Day (MWNADAY)

Saturday June 23		
	Crawford Auditorium (Rm. 104)	
09:15-10:15	Plenary Talk: Mihai Anitescu <i>An Analysis of Local Quasi-Continuum-Like Model Reduction Techniques in Material Science Applications</i> Chair: Henri Schurz	
	Crawford Auditorium (Rm. 104)	Room 106
	MWNADAY Chair: Henri Schurz	CMMSE Financial Mathematics & Engineering Chair: Abdul Q.M. Khaliq
10:15-10:45	Greg Fasshauer <i>Algorithms and Designs for Mesh-Free Methods in High Dimensions: Where some of the Challenges Lie</i>	Sergei Levendorskii <i>Carr's Randomization for American Options in Regime-switching Models</i>
10:45-11:15	Refreshments	
	MWNADAY Chair:	CMMSE General Session Chair: Jesús Martín Vaquero
11:15-11:45	Henri Schurz <i>Estimation of L^p-Errors of Itô-Riemann Quadratures for Stochastic Integrals Along Wiener Paths</i>	Younis Zaidan <i>Well-Posedness of Maxwell-Systems in Nonlinear Dielectric Media</i>
11:45-12:15	David Stewart <i>Simulating Circuits with Diodes and Transistors</i>	
12:15-14:15	Lunch	
14:15-14:45	Dietmar Rempfer <i>Boundary Conditions for the Incompressible Stokes and Navier-Stokes Problems - The Struggle Continues...</i>	
14:45-15:15	Jeongho Ahn <i>A Dynamic Viscoelastic Contact Problem with Adhesion</i>	
16:30	MWNADAY Dinner, Location TBA	