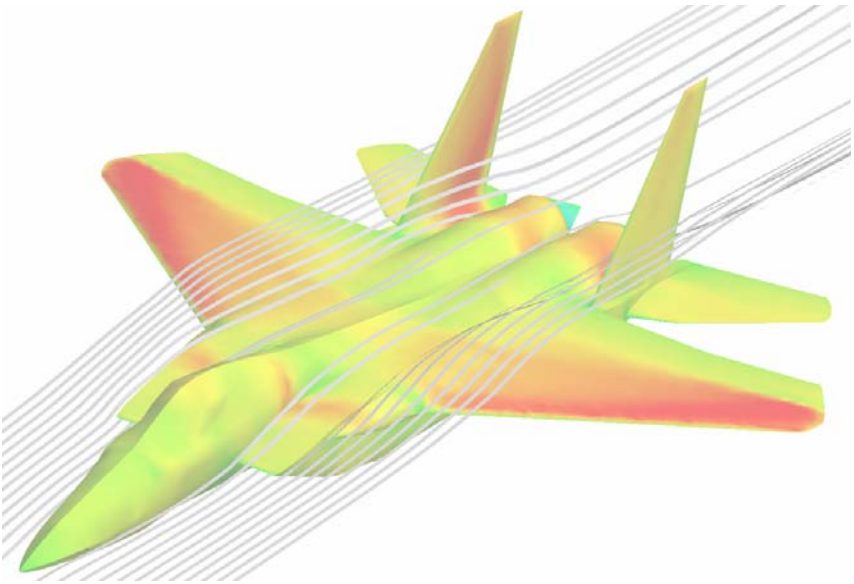
Program

The Seventh Mississippi State – UAB Conference on Differential Equations and Computational Simulations



November 1-3, 2007

Doubletree Hotel

Birmingham, AL

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Bharat Soni, UAB-ME

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Conference Proceedings

Main Editors

John Graef, University of Tennessee at Chattanooga
Roy Koomullil, University of Alabama at Birmingham
Hyeona Lim, Mississippi State University
Ratnasingham Shivaji, Mississippi State University
Bharat Soni, University of Alabama at Birmingham
Jianping Zhu, University of Texas at Arlington

Associate Editors

Alfonso Castro, Harvey Mudd College
Gary Cheng, University of Alabama at Birmingham
Maya Chhetri, University of North Carolina at Greensboro
Hai Dang, Mississippi State University

Seongjai Kim, Mississippi State University
Ian W. Knowles, University of Alabama at Birmingham
David Littlefield, University of Alabama at Birmingham
Seth Oppenheimer, Mississippi State University
Chuanxi Qian, Mississippi State University
Mohsen Razzaghi, Mississippi State University
Alan Shih, University of Alabama at Birmingham
James Ward, University of Alabama at Birmingham
Xiangsheng Xu, Mississippi State University

Wednesday, October 31, 2007

6:30PM-8:30PM	Registration/Reception Foyer, Doubletree Hotel

Thursday, November 1, 2007

7:30AM-5:30PM	Registration Foyer, Doubletree Hotel
8:00AM-8:30AM	Opening Ceremony Introduction: Bharat Soni, Program Organizer Opening Remarks: Malcolm Portera, Chancellor, University of Alabama System Eli Capilouto, Provost, University of Alabama at Birmingham (UAB) Joe Thompson, Chair, Operations Board at High Performance Computing Collaboratory, MSU Richard B. Marchase, V.P. of Research & Economic Development, UAB Linda Lucas, Dean, School of Engineering, UAB Mohsen Razzaghi, Chair, Department of Mathematics and Statistics, MSU Program Announcements: Jianping Zhu, Program Chair
8:30AM-9:30AM	**Principal Lecture 1:** Heritage I "Bounded Solutions: Differential vs Difference Equations," **Jean Mawhin**, Universite Catholique de Louvain Co-author: J.B. Baillon Chaired by: Jim Ward, University of Alabama at Birmingham
9:30AM-10:30AM	**Principal Lecture 2:** Heritage I "Computational Models – Pushing or Pulling the Realm of Experimental Biomechanics?" **Jeff R. Crandall**, Dept. of Mechanical and Aerospace Engineering, University of Virginia Chaired by: Bharat Soni, University of Alabama at Birmingham
10:30AM-10:45AM	Break

Session A1: Heritage I Chair: Nitin Bhagat, University of Alabama at Birmingham			
10:45AM-11:05AM *Numerical Simulation of Radiative Heat Transfer by Solving Integro-Differential Equations* Babila Ramamoorthy University of Alabama at Birmingham Co-authors: Gary Cheng, Roy Koomullil	**11:05AM-11:25AM** *Development of a Coupled Code for Modeling Detonation Phenomena* David L. Littlefield University of Alabama at Birmingham Co-author: Young-Ho Kim	**11:25AM-11:45AM** *An Efficient Parallel Algorithm for Solving Fluid-Structure Interaction Problems* Ravishekar Kannan Iowa State University Co-authors: X.G. Tan, Z.J. Chen, S. Marella, A. Przekwas	**11:45AM-12:05PM** *Study of Data Interpolation for Overset Meshes: Flow-fields with Discontinuities* Nitin Bhagat University of Alabama at Birmingham Co-author: Roy Koomullil

Session A2: Heritage II Chair: Jaffar Ali Shahul-Hameed, Mississippi State University			
10:45AM-11:05AM *Positive Solutions for a Class of Infinite Semipositone Problems* Jinglong Ye Mississippi State University Co-authors: Mythily Ramaswamy, Ratnasingham Shivaji	**11:05AM-11:25AM** *Existence, Nonexistence and Multiplicity of Solutions for Singular p-Laplacian Problem* Inbo Sim Pusan National University Co-author: Yong-Hoon Lee	**11:25AM-11:45AM** *A Semilinear Wave Equation with Smooth Data and No Resonance Having no Continuous Solution* Alfonso Castro Harvey Mudd College Co-author: Jose Caicedo	**11:45AM-12:05PM** *Multiple Positive Solutions for nxn p-Laplacian Systems with Combined Nonlinear Effects* Jaffar Ali Shahul-Hameed Mississippi State University Co-author: Ratnasingham Shivaji

Session A3: Centennial I Chair: Eric R. Kaufmann, University of Arkansas at Little Rock			
10:45AM-11:05AM *On a Singular Boundary Value Problem for a Nonlinear Differential Equation of Fractional Order* Nickolai Kosmatov University of Arkansas at Little Rock	**11:05AM-11:25AM** *Infinitely Many Periodic Solutions of Nonlinear Wave Equations on S^n* Jintae Kim Tuskegee University	**11:25AM-11:45AM** *Wave Front Solutions in the Theory of Boiling Liquids* Ruediger Landes University of Oklahoma	**11:45AM-12:05PM** *Impulsive Dynamic Equations on a Time Scale* Eric R. Kaufmann University of Arkansas at Little Rock Co-authors: Nickolai Kosmatov, Youssef N. Raffoul

Session A4: Centennial II Chair: Mandar Kulkarni, University of Alabama at Birmingham			
10:45AM-11:05AM *A Bioclogging Model that Accounts for Spatial Spreading of Bacterial Populations and its Effect on Flow Dynamics* Hermann J. Eberl University of Guelph Co-authors: M. A. Efendiev, L. Demaret	**11:05AM-11:25AM** *Asymptotic Decay of Solutions of the Homogeneous Navier-Stokes Equations* Zdenek Skalak Czech Technical University	**11:25AM-11:45AM** *The Lattice Boltzmann Method and it's Applications* Kang Jin Auburn University Co-author: A. J. Meir	**11:45AM-12:05PM** *A Sobolev Gradient Descent Algorithm for an Inverse Problem in Reflection Seismology* Mandar Kulkarni Univ. of Alabama at Birmingham Co-author: Ian Knowles

Session A5: University Chair: Vasilios Alexiades, University of Tennessee at Knoxville			
10:45AM-11:05AM *Methane Hydrate Formation and Decomposition* Vasilios Alexiades University of Tennessee	**11:05AM-11:25AM** *Implementation of the Space Time Finite Volume Method on a One Dimensional Wave Maker* Matthew Brozak University of Central Arkansas Co-author: Clarence Burg	**11:25AM-11:45AM** *Noise Modeling and PDE-based Denoising for Magnetic Resonance (MR) Imagery* Aisha Alwehebi Mississippi State University Co-author: Seongjai Kim	**11:45AM-12:05PM** *Runge-Kutta Discontinuous Galerkin Schemes for a Model Constrained Evolution Problem* Alexander Alekseenko California State University

12:05PM-1:35PM	Lunch
1:35PM-2:35PM	**Principal Lecture 3:** Heritage I "Mathematical Models of the Biofluidmechanics of Reproduction," **Lisa Fauci**, Dept. of Mathematics, Tulane University Chaired by: Chuanxi Qian, Mississippi State University
2:35PM-3:35PM	**Principal Lecture 4:** Heritage I "Finite Morse Index Solutions and the Branch of Positive Solutions of Exponential Problems," **Norman Dancer**, School of Mathematics and Statistics, University of Sydney Chaired by: Alfonso Castro, Harvey Mudd College
3:35PM-3:50PM	Break

Session B1: Heritage 1 Chair: Bela Soni, Mississippi State University				
3:50PM-4:10PM *FEM (Finite Element Method) Simulations in Spring Mass Lattice Modeling in Elastic Structure with Defects* JigarKumar Patel University of Texas at Dallas	**4:10PM-4:30PM** *Performance Enhancement of ATM Software* Bharat Bhushan Sagar Dr K.N. Modi Institute of Engineering & Technology	**4:30PM-4:50PM** *Computational Simulation of Aerodynamics and Dynamics of Wind Turbines* Dmytro Redchyts` Institute of Transport Systems and Technologies of National Academy of Sciences of Ukraine	**4:50PM-5:10PM** *Effects of Inlet Velocity Profile on Flows in Multigenerational Bronchial Tubes* Charla Lindley Mississippi State University Co-authors: Bela Soni, David Thompson	**5:10PM-5:30PM** *Simultaneous Effects of Nonplanarity and Asymmetry on Small Bronchial Tube Flows and Microparticle Transport* Bela Soni Mississippi State University Co-authors: Charla Lindley, David Thompson

Session B2: Heritage 2 Chair: Jon Jacobsen, Harvey Mudd College				
3:50PM-4:10PM *Existence and Regularity of Solutions to Doubly Nonlinear Diffusion Equations* Jochen Merker University of Rostock	**4:10PM-4:30PM** *Drift-Diffusion Model for Semiconductors with Temperature* Xiangsheng Xu Mississippi State University	**4:30PM-4:50PM** *Positive Radial Solutions to an Exterior Elliptic Boundary-value Problem: Application to the Hamiltonian Constraint Equation in General Relativity* Nicolae Tarfulea Purdue University Calumet	**4:50PM-5:10PM** *Nontrivial Critical Groups in p-Laplacian Systems* Kanishka Perera Florida Institute of Technology	**5:10PM-5:30PM** *Traveling Waves and Shocks in a Viscoelastic Generalization of Burgers Equation* Jon Jacobsen Harvey Mudd College Co-authors: Victor Camacho, Robert Guy

Session B3: Centennial I Chair: John R. Graef, University of Tennessee at Chattanooga				
3:50PM-4:10PM *A Dirichelet m-Point Boundary Value Problem with a p-Laplacian Like Operator* Chaitan Gupta University of Nevada Co-authors: M. Garcia-Huidobro, R. Manasevich	**4:10PM-4:30PM** *Second Order Differential Equations with Asymptotically Small Dissipation* Hans Engler Georgetown University Co-authors: Alexandre Cabot, Sebastien Gadat	**4:30PM-4:50PM** *Spectrum for One-dimensional p-Laplacian with a Singular Weight* Yong-Hoon Lee Pusan National University Co-author: Chan-Gyun Kim	**4:50PM-5:10PM** *A Model for Gene Activation* Seth F. Oppenheimer Mississippi State University Co-authors: Stephen Pruett, Ruping Fan	**5:10PM-5:30PM** *Existence of Positive and Negative Solutions of a Nonlinear Periodic Boundary Value Problem* John R. Graef University of Tennessee at Chattanooga Co-author: Lingju Kong

Session B4: Centennial II Chair: Eugene Eckstein, University of Memphis				
3:50PM-4:10PM *A Quantitative Property of Arnold's Resonance Tongues* Oleg Makarenkov Research Institute of Mathematics	**4:10PM-4:30PM** *Singular Limits of Reaction Diffusion Equations of Kpp Type in an Infinite Cylinder* Fernando Carreon Arizona State University	**4:30PM-4:50PM** *Levinson Theorem for 2 x 2 System and Applications to the Asymptotic Stability and Schrodinger Equation* Gro Hovhannisyan Kent State University	**4:50PM-5:10PM** *Gradient Estimates for the Perfect Conductivity Problem* Ellen Shiting Bao Rutgers University Co-authors: YanYan Li, Biao Yin	**5:10PM-5:30PM** *Suspension Flows and Stochastic Models: Ways to Capture the Continuing Nature and Internal Organization* Eugene Eckstein University of Memphis Co-authors: Jerome Goldstein, Vinay Bhal

Session B5: University Chair: Clarence Burg, University of Central Arkansas				
3:50PM-4:10PM *A Finite Volume Element Method With Bilinear Immersed Finite Elements* Xiaoming He Virginia Tech Co-author: Tao Lin	**4:10PM-4:30PM** *A Numerical Method and its Demo on Finding Multiple Unstable Solutions to Nonlinear Variational Systems* Xianjin Chen Texas A&M Univeristy, College Station Co-author: Jianxin Zhou	**4:30PM-4:50PM** *An Essentially Non-Oscillatory Crank-Nicolson Procedure for Incompressible Navier-Stokes Equations* Chung-Ki Cho Soonchunhyang University Co-author: Seongjai Kim	**4:50PM-5:10PM** *Application of Richardson Extrapolation to the Numerical Solution of Partial Differential Equations* Clarence Burg University of Central Arkansas Co-author: Taylor Erwin	**5:10PM-5:30PM** *Application of Richardson Extrapolation to the Two Dimensional Shallow Water Equations* Taylor Erwin University of Central Arkansas Co-author: Clarence Burg

6:30PM-8:30PM	Reception - UAB Business and Engineering Complex (BEC) Lobby

Friday, November 2, 2007

7:30AM-5:30PM	Registration
8:00AM-9:00AM	**Principal Lecture 5:** Heritage I "High Order Discontinuous Galerkin Methods for Aerodynamics," **Jaime Peraire,** Dept. of Aeronautics and Astronautics, Massachusetts Institute of Technology Chaired by: Padmanabhan Seshaiyer, George Mason University
9:00AM-10:00AM	**Principal Lecture 6:** Heritage I "High Performance Computing at the Army Research Laboratory - Impact of Cluster technology," **Charles J. Nietubicz**, Army Research Laboratory Chaired by: David L. Littlefield, University of Alabama at Birmingham
10:00AM-10:15AM	Break

Session C1: Heritage I Chair: Kshitij Neroorkar, University of Alabama at Birmingham				
10:15AM-10:35AM *Optimized Difference Schemes for Multidimensional Hyperbolic PDEs* Adrian Sescu University of Toledo Co-authors: Ray Hixon, Abdollah A. Afjeh	**10:35AM-10:55AM** *A Computational Domain Decomposition Approach for Solving Coupled Flow-Structure-Thermal Interactions* Padmanabhan Seshaiyer George Mason University Co-authors: Eugenio Aulisa, Sandro Manservisi	**10:55AM-11:15AM** *Dynamic Simulation of Biofilm Sloughing Event using a Finite Element based CFD Code* Rangarajan Sudarsan University of Guelph Co-author: Hermann J. Eberl	**11:15AM-11:35AM** *Semiclassical Calculation of Vibrational Energy Relaxation Rates in Polar Liquids* Henry Boateng University of Michigan Co-authors: Eitan Geva, Robert Krasny	**11:35AM-11:55AM** *Numerical Study of Turbulence Transition Models* Kshitij Neroorkar University of Alabama at Birmingham Co-author: Gary Cheng

Session C2: Heritage II Chair: Jim Ward, University of Alabama at Birmingham				
10:15AM-10:35AM *Continuous-Time Mathematical Modeling of Transgenes Mosquitoes in Preventing Malaria Transmission* Jia Li University of Alabama in Huntsville	**10:35AM-10:55AM** *Mathematical and Biological Consequences of Aggregative Behavior near Habitat Boundaries* Robert Stephen Cantrell The University of Miami Co-author: Chris Cosner	**10:55AM-11:15AM** *Traveling Waves in Diffusive Ross-Macdonald Type Host-Vector Models* Shigui Ruan University of Miami	**11:15AM-11:35AM** *Global Existence for a Model of Chemotaxis* Glenn Webb Vanderbilt University Co-authors: Janet Dyson, Rosanna Villella-Bressan	**11:35AM-11:55AM** *A Degenerate Reaction Diffusion System modeling the Atmospheric of Pollutants* William Fitzgibbon University of Houston Co-authors: Michel Langlais, Jeff Morgan

Session C3: Centennial I Chair: Xiaoqin Wu, Mississippi Valley State University				
10:15AM-10:35AM *A Chemostat Model of Resource Competition and Allelopathy* Ian P. Martines University of Texas at Arlington Co-authors: Hristo V. Kojouharov, James P. Grover	**10:35AM-10:55AM** *Bounded Solutions of Nonlinear Parabolic Systems* Nsoki Mavinga University of Alabama at Birmingham Co-author: Mubenga Nkashama	**10:55AM-11:15AM** *Positive Solutions of Sublinear Elliptic Systems* Haiyan Wang Arizona State University	**11:15AM-11:35AM** *Solutions of Higher Order Boundary Value Problems* Lingju Kong University of Tennessee at Chattanooga Co-authors: John R. Graef, Qingkai Kong	**11:35AM-11:55AM** *Existence for the Thermoelastic Semiconductor Equations* Xiaoqin Wu Mississippi Valley State University

Session C4: Centennial II Chair: Vladimir Varlamov, University of Texas - Pan American				
10:15AM-10:35AM *The Design of Axisymmetric Ducts for Incompressible Flow with Blockage Effects and Body Forces* Vasos Pavlika University of Westminster	**10:35AM-10:55AM** *Traces of Functions in Hardy Spaces on Nonsmooth Domains and Applications to Compensated Compactness* Tunde Jakab University of Virginia Co-authors: Irina Mitrea, Marius Mitrea	**10:55AM-11:15AM** *Properties of the Solutions of Hyperbolic Stochastic Partial Differential Equations* Oleksiy Ignatyev Michigan State University Co-author: Hassan Allouba	**11:15AM-11:35AM** *Nonlinear Schrödinger Equation with Bound States of Higher Multiplicities* Theresa N. Busse University of Texas at Arlington	**11:35AM-11:55AM** *Airy-type Solutions for Korteweg-de Vries Equation* Vladimir Varlamov University of Texas - Pan American

Session C5: University Chair: Alfonso Limon, Claremont Graduate University				
10:15AM-10:35AM *Finite Difference Methods for Coupled Flow Interaction Transport Models* Shelly McGee Texas Tech University Co-author: Padmanabhan Seshaiyer	**10:35AM-10:55AM** *Spectral Element Simulation of Flow past an Ellipsoid at Different Reynolds Numbers* Don Liu Louisiana Tech University	**10:55AM-11:15AM** *Divergence Free Finite Element Methods for the Navier-Stokes Equations by H(div) Elements* Xiu Ye University of Arkansas at Little Rock Co-author: J. Wang	**11:15AM-11:35AM** *A Conservative Higher Order Runge-Kutta Discontinuous Galerkin Method for Gas Kinetic Equations* Andrey Mirzoyan California State University Northridge Co-authors: Alexander Alekseenko, Alina Alexeenko	**11:35AM-11:55AM** *Multilevel Solver for Discrete PDEs on kD-Trees* Alfonso Limon Claremont Graduate University Co-author: Hedley Morris

11:55AM-1:30PM	Lunch
1:30PM-2:30PM	**Principal Lecture 7:** Heritage I "Gradient Estimates for Elliptic Equations and Systems from Composite Material," **Yanyan Li**, Rutgers University Chaired by: Xiangsheng Xu, Mississippi State University
2:30PM-3:30PM	**Principal Lecture 8:** Heritage I "ODE-based Multiscale Approach to Modeling Cardiac Contraction," **John Rice**, IBM T.J. Watson Research Center Co-authors: Jagir Hussan, Yuhia Tu, Gustavo Stolovitzky, and Pieter de Tombe Chaired by: Gary Cheng, University of Alabama at Birmingham
3:30PM-3:45PM	Break
3:45PM-4:45PM	**Principal Lecture 9:** Heritage I "Two Variational Problems with the p-Laplacian: a Stationary Cahn-Hilliard Model and the Fredholm Alternative near the First Eigenvalue," **Peter Takac**, Institute for Mathematics, University of Rostock Chaired by: Hai Dang, Mississippi State University

Session D1: Heritage I Chair: Wenyuan Liao, University of Calgary			
4:45PM-5:05PM *Biochemical Reaction Instigating Vision – Sensitivity on Parameters and Optimization of the Output Based on Them* Sophonie K. Tchoua University of Tennessee Co-author: Vasilios Alexiades	**5:05PM-5:25PM** *On the Spurious Solutions in the High Order Finite Difference Methods for Eigenvalue Problems* Shan Zhao University of Alabama	**5:25PM-5:45PM** *Global Multiscale Finite Methods for Acoustic Wave Equations with Continuum Spatial Scales* Lijian Jiang Texas A&M University Co-authors: Y. Efendievy, V. Ginting	**5:45PM-6:05PM** *A High Order Compact Finite Difference Scheme for Solving Convection-Diffusion-Reaction Equation* Wenyuan Liao University of Calgary Co-author: Jianping Zhu

Session D2: Heritage II Chair: Yi Li, University of Iowa			
4:45PM-5:05PM *Principal Eigenvalue for a Quasilinear Elliptic Problem in an Unbounded Domain* Yechoui Akila ICTP	**5:05PM-5:25PM** *Boundary Blow-up Solutions to a Class of Semilinear Elliptic Equations* Peng Feng Florida Gulf Coast University	**5:25PM-5:45PM** *Pattern Formation in Cross Diffusion Systems* Dung Le University of Texas at San Antonio Co-authors: Linh Nguyen, Toan Nguyen	**5:45PM-6:05PM** *Stability of Travelling Waves with Noncritical Speeds for Double Degenerate Fisher-Type Equations* Yi Li University of Iowa Co-author: Yaping Wu

Session D3: Centennial I Chair: Hubertus von Bremen, California State Polytechnic University-Pomona			
4:45PM-5:05PM *Long-Time Behavior of Solutions to a Model of Three Species* Zhenbu Zhang Jackson State University	**5:05PM-5:25PM** *Travelling Solution of a Variational Wave Equation on Two Space Dimension* Tae-Wan Park Grand Valley State University	**5:25PM-5:45PM** *Traveling Wave Solutions to a Reaction-Diffusion System* Zhaosheng Feng University of Texas-Pan American	**5:45PM-6:05PM** *Stability in a Population Model with Transgenic Mosquitoes* Hubertus von Bremen California State Polytechnic University-Pomona Co-author: Robert Sacker

Session D4: Centennial II Chair: Katharine Ott, University of Virginia			
4:45PM-5:05PM *Lipschitz-Convex Programming Problems governed by Nonlinear Elliptic PDEs* M.D. Voisei Towson University	**5:05PM-5:25PM** *A Boundary Control Problem with a Nonlinear Reaction Term* M. Salman Tuskegee University Co-author: John R. Cannon	**5:25PM-5:45PM** *Spectral Theory for the Maxwell System of Equations* Katharine Ott University of Virginia Co-author: Irina Mitrea	

Session D5: University Chair: Babila Ramamoorthy, University of Alabama at Birmingham			
4:45PM-5:05PM *Steady Flow of Non-Newtonian Fluid with Pressure/Temperture Dependent Viscosity in a Generalized Couette Flow* Adesanya Samuel Olumide Olabisi Onabanjo University Co-authors: R.O. Ayeni, O.O. Otolorin	**5:05PM-5:25PM** *Study of the Flutter of a "Hereditary-Deformable" Airfoil* F.B. Badalov Tashkent State Aviation Institute Co-author: B.Sh Usmonov	**5:25PM-5:45PM** *Modifying a Plasma System with an Energy Equation in 2D* R. Naidoo DUT	

7:00PM-9:00PM	Banquet at the McWane Science Center

Saturday, November 3, 2007

7:30AM-2:00PM	Registration
8:00AM-9:00AM	**Principal Lecture 10:** Heritage I "Fast High-Order High-Frequency Solvers in Computational Acoustics and Electromagnetics," **Oscar P. Bruno**, Applied and Computational Mathematics, California Institute of Technology Chaired by: Jianping Zhu, University of Texas at Arlington
9:00AM-10:00AM	**Principal Lecture 11:** Heritage I "Mathematical Aspects of the Ideal Free Distribution," **Chris Cosner**, Dept. of Mathematics, University of Miami Co-authors: R.S. Cantrell, D. DeAngelis, Y. Lou, M. Kshatriya, and V. Padron Chaired by: Seth Oppenheimer, Mississippi State University
10:00AM-10:15AM	Break
10:15AM-11:15AM	**Principal Lecture 12:** Heritage I "Coupled Contagion Dynamics of Fear and Disease: Mathematical and Computational Explorations," **Joshua M. Epstein**, Director, Center on Social and Economic Dynamics, The Brookings Institution Co-authors: Jon Parker, Derek Cummings, and Ross A. Hammond Chaired by: Roy Koomullil, University of Alabama at Birmingham
11:15AM-11:30AM	Remarks by organizers (Ratnasingham Shivaji - MSU and Roy Koomullil - UAB)
11:30AM-1:00PM	Lunch

Session E1: Heritage I Chair: Seongjai Kim, Mississippi State University			
1:00PM-1:20PM *The Numerical Solution of a Differential Equation of Steepest Descent in Non-Hilbert Sobolev Spaces and Applications* Ivie Stein Jr. The University of Toledo	**1:20PM-1:40PM** *Finite Element Method on Arbitrary Surfaces* Necibe Tuncer Georgia State University	**1:40PM-2:00PM** *Multiwavelet Representation of Functions and Operators* Chuan Li University of Tennessee	**2:00PM-2:20PM** *Speckle-Mowing Anisotropic Diffusion for Geospatial Imagery* Seongjai Kim Mississippi State University Co-author: Jinmu Choi

Session E2: Heritage II Chair: Maya Chhetri, University of North Carolina at Greensboro			
1:00PM-1:20PM *Existence Results for Quasilinear Semipositone Equations on Bounded Domains* Matthew Rudd University of Idaho	**1:20PM-1:40PM** *Global Existence of Multiple Positive Solutions for Two-point Boundary Value Problems for p-Laplacian System* Eun Kyoung Lee Pusan National University	**1:40PM-2:00PM** *An Existence Result for a Singular Semipositone Problem* Stephen Robinson Wake Forest University Co-author: Maya Chhetri	**2:00PM-2:20PM** *Multiplicity of Positive Solutions for a Class of Singular Elliptic PDEs* Maya Chhetri University of North Carolina at Greensboro Co-author: S. B. Robinson

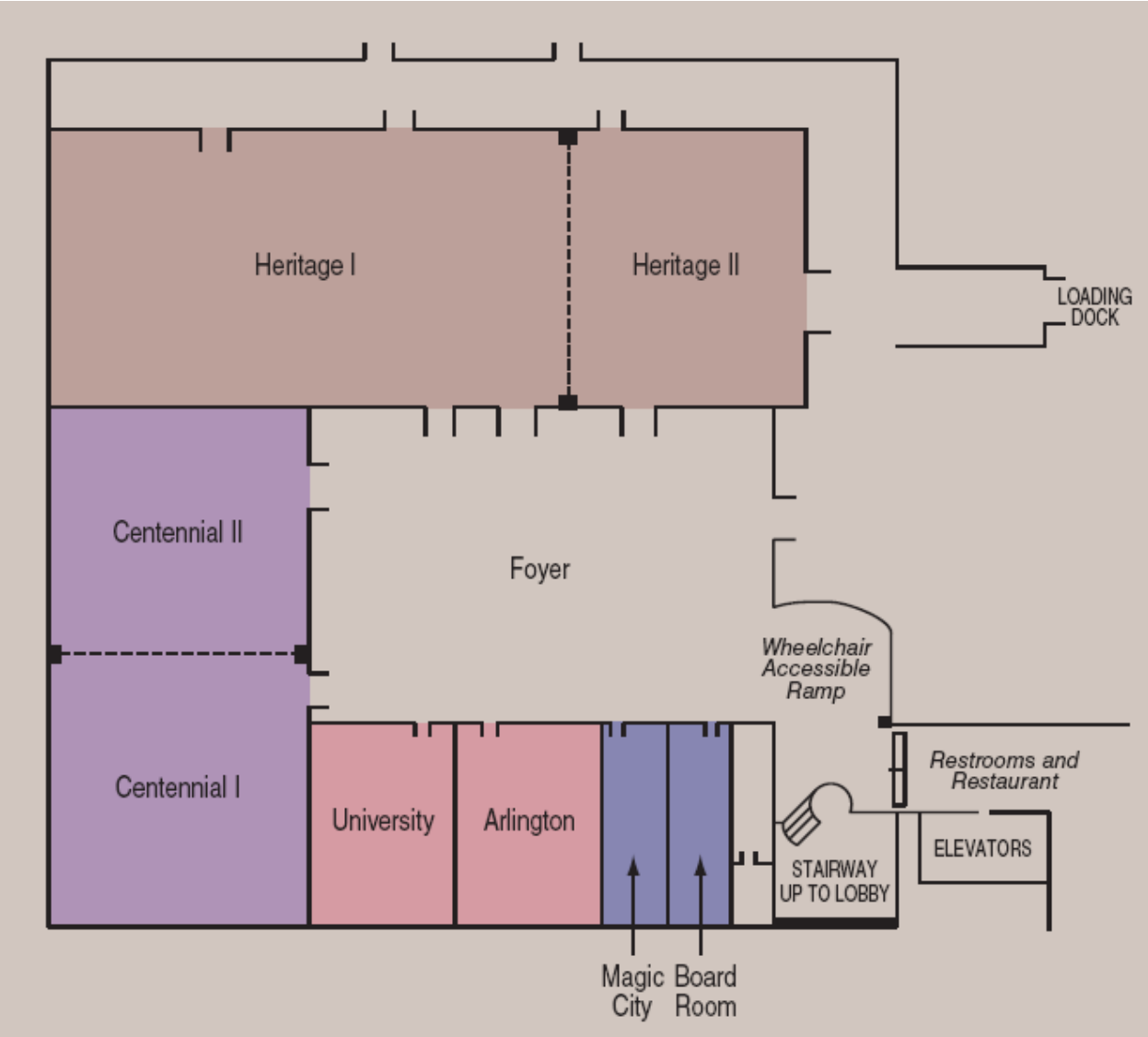
Session E3: Centennial I Chair: David Hartenstine, Western Washington University			
1:00PM-1:20PM *Traveling Wave Solutions for a Competitive Reaction Diffusion System* Xiaojie Hou University of North Carolina at Wilmington	**1:20PM-1:40PM** *Traveling Pulse Solutions for a Nonlocal Reaction-Diffusion Equation* Joaquin Rivera Arizona State University Co-author: Yi Li	**1:40PM-2:00PM** *Brunn-Minkowski Type Inequalities Related to the Monge-Ampère Equation* David Hartenstine Western Washington University	

Session E4: Centennial II Chair: Hassan Khassehkhan , University of Guelph			
1:00PM-1:20PM *Computing Blow-up Solutions* Amin Boumenir University of West Georgia	**1:20PM-1:40PM** *Spectral Theory of Functions and Stability and Asymptotic Behavior of Evolution Equations* Nguyen Van Minh University of West Georgia	**1:40PM-2:00PM** *Optimal Flexibility in Flapping Appendages* Silas Alben Georgia Tech	**2:00PM-2:20PM** *A Semi-discrete Biofilm Model* Hassan Khassehkhan University of Guelph Co-author: Hermann J. Eberl

2:20PM-2:50PM	Tea Time and Adjourn the Conference

Conference Meeting Location: Floor Plan

The conference meetings will be held on the ground floor of the Doubletree Hotel.



The Seventh Mississippi State – UAB Conference on DIFFERENTIAL EQUATIONS and COMPUTATIONAL SIMULATIONS

Brief Biography of Principal Speakers

Oscar P. Bruno, Professor of Applied and Computational Mathematics, California Institute of Technology (Caltech). Dr. Bruno received his Ph.D. from the New York University in 1989. His research interests are in the areas of optics, elasticity and electromagnetism, remote sensing, radar, overall electromagnetic and elastic behavior of materials (solid, fluids, composites materials, multiple-scale geometries), and phase transitions. He graduated with a Friedrichs Award for an outstanding dissertation in mathematics from the Courant Institute. He is also the recipient of a Young Investigator Award from the National Science Foundation (NSF) and a Sloan Foundation Fellowship.

Chris Cosner, Professor of Mathematics at the University of Miami. Dr. Cosner received his Ph.D. in Mathematics from the University of California, Berkley in 1977 and has been on the faculty of the University of Miami for over 20 years. He also held visiting positions at the Institute for Advanced Studies, Texas A & M University, and the University of Tennessee. His research focuses on studying mathematical models for the ways that organisms interact with each other, humans, and the environment, especially in their utilization of space. He has published extensively and made numerous presentations in these research areas. His research has been funded by NSF continuously for 20 years. He recently co-authored the book titled "Spacial Ecology on Reaction – Diffusion Equation," John–Wiley & Sons Ltd.

Jeff Crandall, Professor of Mechanical and Aerospace Engineering and Biomedical Engineering at the University of Virginia. Dr. Crandall also serves as the Director of the University's Center for Applied Biomechanics. His research focuses on understanding the human body's response and injury mechanisms during dynamic loading with applications in the areas of impact biomechanics, transportation safety, orthopedic studies, military and blast trauma, and sports-related injuries. He is a fellow of the Society of Automotive Engineers and the Association for the Advancement of Automotive Medicine and a member of the board for the International Research Committee on the Biomechanics of Injury. He has authored more than 350 technical papers and has received numerous awards, including the United States Government Award for Engineering Excellence.

Norman Dancer, Professor of Mathematics in the School of Mathematics and Statistics at the University of Sydney. Dr. Dancer received his Ph.D. in Mathematics from the University of Cambridge in 1972 and was elected a Fellow of the Australian Academy of Science (FAA) in 1996. He also received a Research Award of the Humboldt Foundation in 2004. He has given plenary lectures at international meetings in many countries, including the USA, Canada, UK, France, Germany, Italy and Spain. He is currently on the editorial board of a number of journals including Abstract and Applied Analysis, Advanced Nonlinear Studies, Advances in Differential Equations, Communications in Applied Nonlinear Analysis, and Topological Methods in Nonlinear Analysis.

Joshua M. Epstein, Director of the Center on Social and Economic Dynamics and Senior Fellow in Economic Studies at the Brookings Institution. Dr. Epstein received his Ph.D. from the Massachusetts Institute of Technology. His area of expertise is the modeling of complex social, economic and biological systems using agent-based computational models and nonlinear dynamical systems. He has published widely in the modeling area, with scholarly articles on economics, epidemiology, archaeology, game theory, and civil violence. He is a member of the External Faculty of the Santa Fe Institute and the New York Academy of Sciences and has taught mathematical and computational modeling at Princeton and the Santa Fe Institute Summer School.

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