

# SECTAM XX - Program

April 17, 2000 (Monday)

## Legend

Session #, Session Title

Time  
Conference Center Room #

Paper #, Paper Title, Authors, Organization, Location  
(\*: indicates abstract submission only)

### Session MA1. Mechanical Behavior of Sandwich Composites

8:30 am - 10:00 am  
Room 211

#### Co-Chairs:

H. Mahfuz, Tuskegee University  
A. Kelkar, North Carolina A&T University

SM-63, **Response of Foam-Core Sandwich Composites at High Strain Rate**, *H. Mahfuz, W.A. Mamun, H. Mohamed, U. Vaidya, A. Haque, S. Jeelani*, Tuskegee University, Tuskegee, Alabama

SM-110, **Mid-Plane Asymmetric Composite Sandwich Plates Subjected to Lateral Loads**, *N. Satapathy*, Roush Industries, Livonia, Michigan, *J.R. Vinson*, University of Delaware, Newark, Delaware.

SM-55, **Low-Velocity Impact of Laminated Plates and Analyzing the Loss of Stiffness in Force Time Curves**, *W. Craft, A. Kelkar, J. McRae*, North Carolina A & T State University, Greensboro, North Carolina

\*SM-52, **The Effect of Normal Strains in the Buckling of Thick Orthotropic Cylindrical Shells Under External Pressure**, *G.A. Kardomateas*, Georgia Institute of Technology, Atlanta, Georgia

SM-14, **Homogenization of Structural Core Sandwich**, *L.A. Carlsson*, Florida Atlantic University, Boca Raton, Florida, *T. Nordstrand*, SCA Research AB, Sundsvall, Sweden

### Session MA2. Analytical & Numerical Techniques in Solid Mechanics

8:30 am - 10:00 am  
Room 208

#### Co-Chairs:

D.W. Nicholson, Univ of Central Florida  
K.L. Chowdhury, Univ of Calgary

SM-74, **Explicit Boundary Element Method in Nonlinear Solid Mechanics Based on a New Dual Reciprocity Algorithm**, *D.W. Nicholson, A.J. Kassab*, University of Central Florida, Orlando, Florida

\*DC-129, **The Resonance Spectrum of Fluid-Loaded Elastic Cylindrical Shells**, *X.L. Bao, H. Uberall*, Catholic University, *P.K. Raju*, Auburn University, *I.K. Bjorno and L. Bjorno*, Technical University of Denmark, Denmark

SM-16, **Exact Solutions for Generalized Heat Dipoles on a Semi-Space**, *K.L. Chowdhury*, University of Calgary, Calgary, Alberta, Canada

SM-92, **Nonlinear Static Analysis of Piezoelectrically Actuated Beams**, *H.-R. Shih*, Jackson State University, Jackson, Mississippi

SM-53, **Dual Reciprocity Boundary Element Method for Material Inhomogeneous Media**, *L. Chen, A. Kassab, M. Chopra, D. Nicholson*, University of Central Florida, Orlando, Florida

### Session MA3. Mechanical Vibrations

8:30 am - 10:00 am  
Room 112

#### Co-Chairs:

S. Goyal, Lucent Technologies  
D. Marghitu, Auburn University

DC-47, **Vibration Testing and Control of Inflated Objects**, *G. Briand, A.L. Wicks D.J. Inman*, Virginia Tech, Blacksburg, Virginia (invited)

DC-38, **Effects of Edge Support Rotational Elasticity on the Buckling and Free Vibration of In-Plane Loaded Rectangular Plates**, *D.J. Gorman*, University of Ottawa, Ottawa, Canada

DC-40, **A New Method for Realistic and Repeatable Impact-Testing**, *S. Goyal*, Lucent Technologies Bell Laboratories, Murray Hill, New Jersey, *E. K. Buratynski*, Lucent Technologies Bell Laboratories, Princeton, New Jersey

DC-48, **Modeling of Impulse Response Evaluation of Drilled Shafts using Finite Element Analysis**, *M.O. Islam*, University of South Carolina, Columbia, South Carolina

DC-60, **Asymptotic Analysis of Vibrations of Thin Cylindrical Shells**, *I.M. Landman*, Concordia University, Montreal, Quebec, Canada

### Session MA4. Numerical Methods in Fluid Mechanics

8:30 am - 10:00 am  
Room 109

#### Co-Chairs:

P. Cinnella, Mississippi State University  
D. Harris, Auburn University

\*FM-21, **Challenges in the Simulation of Complex Non-Equilibrium Flows**, *P. Cinnella*, Mississippi State University, Starkville, Mississippi

FM-121, **Computational Analysis of Laminar Natural Convection in a Square Cavity Using the Boussinesq Approximation**, *N. Ansari, J.M. Khodadadi*, Auburn University, Auburn, Alabama

FM-61, **Innovative Data-Structures for Finite-Volume Discretizations of Generalized Grids**, *E.A. Luke*, Mississippi State University, Starkville, Mississippi

FM-85, Systematic Grid Convergence Studies and Error Estimations of Numerical Solutions of **the Exit Region of Submerged Laminar Jets**, *A.G. Zhao, R.M. Barron, G.W. Rankin*, University of Windsor, Windsor, Ontario, Canada

\*FM-11, **Numerical Simulation of Erosion on Tubes in Two-Phase Flow**, *C. Bhasker*, BHEL, Corporate R&D Division, Hyderabad, India.

Coffee/Refreshments Break

10:00 am - 10:30 am  
Rosemary

Keynote Lecture-I

10:30 am - 11:30 am  
Room 206/207

Chair:  
P.K. Raju, Auburn University

**Some Developments and Future Directions in Theoretical and Computational Mechanics**

by **J.N. Reddy**, Texas A&M University, Texas

Lunch Break

on your own

11:30 am - 1:00 pm

Session MB1. Modeling of Composite Materials & Structures

1:00 pm - 2:30 pm  
Room 211

Co-Chairs:  
A. Szekeres, Technical Univ of Hungary  
B. LaMattina, ABB Power T&D Company

\*SM-125, **Cross-Coupled Heat and Moisture Problems in Composite Materials**, *Andras Szekeres*, Technical University, Budapest, Hungary (invited)

SM-59, **Analysis of Thick Walled Composite Pipe for Offshore Riser Applications**, *B. LaMattina*, ABB Power T & D Company, Raleigh, North Carolina, *B.E. Graham*, North Carolina State University, Raleigh, North Carolina

SM-13, **A Finite Element Analysis of Anisotropic Mindlin Plates**, *G.R. Buchanan, J. Peddieson* Tennessee Technological University, Cookeville, Tennessee

SM-2, **A Nonlinear Analysis of Thermal Stresses in Multi-layered Cylindrical Shells**, *M.H. Alimi*, North Dakota State University, Fargo, North Dakota, *A.E. Carden*, University of Alabama, Tuscaloosa, Alabama

\*SM-109, **FEM Response Analysis of GS-44 Specimen under Four-Point Bending**, *I.M. Vasylyak*, *P.V. Lisovsky*, *A.I. Velikanov*, and *V.A. Podolynn*, Dnepropetrovsk State Metallurgical Academy of Ukraine, Institute for Problems of Materials Science, Kiev, Ukraine

### Session MB2. Modeling and Characterization of Interfaces

1:00 pm - 2:30 pm  
Room 208

#### Co-Chairs:

J. Qu, Georgia Institute of Technology  
C.T. Tsai, Florida Atlantic University

\*SM-78, **Mechanics of Polymer/Metal Interfaces in Microelectronic Packaging**, *J. Qu*, Georgia Institute of Technology, Atlanta, Georgia

SM-27, **Structural Damping Induced by Friction at Joint Interfaces**, *X. Deng*, *W. Chen* University of South Carolina, Columbia, South Carolina

\*SM-51, **Mixed Mode Interface or Parallel to the Interface Cracks in a Bi-material Half Plane**, *H. Huang*, *G.A. Kardomateas*, *V. La Saponara*, Georgia Institute of Technology, Atlanta, Georgia

\*SM-102, **Elasto-Plastic Finite Element Analysis of Fretting Stresses in Pre-Stressed Strip in Contact with Cylindrical Pad**, *C.T. Tsai*, Florida Atlantic University, Boca Raton, Florida, *S. Mall*, Air Force Research Laboratory, WPAFB, Ohio

SM/MM-50, **Interfacial Stress Analysis and Fracture in Electronic Packaging Assemblies with Heterogeneous Underfill**, *J.E. Park*, *I. Jasiuk*, Georgia Institute of Technology, Atlanta, Georgia; *A. Zubelewicz*, IBM Corporation, Endicott, New York

### Session MB3. Nonlinear Dynamics

1:00 pm - 2:30 pm  
Room 112

#### Co-Chairs:

S.C. Sinha, Auburn University  
C.D. Rahn, Clemson University

\*DC-125, **On the Discretization of Spatially Continuous Systems with Quadratic and Cubic Nonlinearities**, *A.H. Nayfeh*, Virginia Polytechnic Institute and State University, Blacksburg, Virginia (invited)

\*DC-96, **New Strategies of Chaos Control for Dynamic Systems with Time-Periodic Coefficients**, *A. Dávid*, *V. Deshmukh*, *S.C. Sinha*, Auburn University, Auburn, Alabama

DC-9, **Discrete-Time Algorithms for Identification of Unknown Force/Moment Distributions in Continuous-Time Distributed Parameter Systems**, *M.J. Balas*, University of Colorado, Boulder, Colorado, *C.D. Johnson*, University of Alabama, Huntsville, Alabama

DC-79, **Nonlinear Kinematics of a Continuous Backbone, Cable-Driven Robot**, *C. Li*, *C.D. Rahn*, Clemson University, Clemson, South Carolina

\*DC-56, **Nonlinear Axial Oscillations in Thrust Balanced Pumps and Turbines**, *D.R. Smith*, University of California San Diego, La Jolla, California, *H.E. Kimmel*, Ebara International Corporation, Sparks, Nevada

#### Session MB4. Computations and Analysis in Fluid Dynamics

1:00 pm – 2:30 pm  
Room 109

**Co-Chairs:**

Jay Khodadadi, Auburn University  
E. A. Luke, Mississippi State University

FM-19, **Numerical Computation of Chemically Reactive Turbulent Flows Implemented Within the Loci System**, *X.-L. Tong, E.A. Luke, P. Cinnella*, Mississippi State University, Starkville, Mississippi

FM-20, **Numerical Simulation of Under-Expanded Jet Impingement**, *J. Wu, L. Tang, X.-L. Tong, E. Luke, P. Cinnella*, Mississippi State University, Starkville, Mississippi

FM-26, **Critical Investigation of Differencing and Linearization Schemes for the 2-D Parabolized Navier Stokes Equations**, *V. Dedoussis*, University of Piraeus, Piraeus, Greece

\*FM-32, **On the Biomechanics of the Endolymph**, *E.F. Elshehawey, M. El Shahed*, Ain Shams University, Helipolis, Cairo, Egypt

FM-22, **An Evaluation of the Numerical Performance of Preconditioning Methods for the Two-Dimensional Euler Equation**, *M. Zaccanti and P. Cinnella*, Starkville, Mississippi

\*FM-12, **CFD Analysis of Flow Through Steam Turbine Exhaust Hood**, *V.K. Iyer, K.V. Ramani, C. Bhasker*, CFD Group, Vikasnagar, Hyderabad, India

<u>Coffee/Refreshments Break</u>
----------------------------------

2:30 pm – 2:45 pm Rosemary
-------------------------------

#### Session MC1. Materials Characterization

2:45 pm – 4:15 pm  
Room 211

**Co-Chairs:**

U.K. Vaidya, North Dakota State Univ  
J. Qu, Georgia Institute of Technology

\*SM130, **Recent Advances in Composites Research**, Y.D. Rajapakse, Office of Naval Research, Arlington, VA (invited)

SM-70, **Modal Moment Index for Damage Detection in Beam and Plate Structures**, *D.W. Nicholson, K.A. Alnefaie*, University of Central Florida, Orlando, Florida

SM-105, **Vibration Response of Sandwich Composites Subjected to Low Velocity Impact Damage**, *U.K. Vaidya*, North Dakota State University, Fargo, North Dakota, *M. Kamath*, Altair Engineering, Troy, Michigan

\*SM-5, **Impact Response of Some Sandwich Constructions**, *E.O. Ayorinde*, Wayne State University, Detroit, Michigan

\*SM-42, **Notch Sensitivity of Woven Ceramic Matrix Composites under Tensile Loading - An Experimental and Finite Element Study**, *L. Ahmed, A. Haque, H. Mahfuz, H. Mohamed, S. Jeelani*, Tuskegee University, Tuskegee, Alabama

### **Session MC2. Experiments and Techniques in Solid Mechanics**

2:45 pm - 4:15 pm  
Room 208

#### **Co-Chairs:**

J.C. Suhling, Auburn University  
B. Hojjatie, Institute of Paper Science

SM-127, **Sensitivity of (100) Silicon VDP Sensors to Uniaxial and Hydrostatic Loads**, *A.K.M. Mian, J.C. Suhling and R.C. Jaeger*, Auburn University, AL

SM-100, **Measuring Force and Excursion on an Exercise Device for Astronauts**, *R. Dunavant, B. Box, S. Swindle*, University of Alabama, Tuscaloosa, AL

\*SM-95, **Accuracy of Silicon Wafer Shape Measurement**, *J.K. Sinha*, ADE Corporation, Westwood, Massachusetts

SM-44, **Thermal Imaging as a Tool for Measuring In-Plane Moisture Distribution in Paper**, *B. Hojjatie, J. Abedi, D.W. Coffin*, Institute of Paper Science and Technology, Atlanta, Georgia

### **Session MC3. Mechanics in Manufacturing**

2:45 pm - 4:15 pm  
Room 112

#### **Co-Chairs:**

X. Deng, University of South Carolina  
J. Peddiesson, Tennessee Tech Universty

MF-28, **Metal Cutting Process Simulation Using the Finite Element Method**, *X. Deng, C. Shet*, University of South Carolina, Columbia, South Carolina

\*MF-116, **Design of Metal Forming Processes using a Gradient Based Optimization Approach**, *A. Srikanth, N. Zabaraz*, Cornell University, Ithaca, New York

\*MF-25, **Finite Element Simulation and Model Validation of Gas Metal Arc Welding Process**, *M.S. Davoud*, Georgia Southern University, Statesboro, Georgia, *X. Deng*, University of South Carolina, Columbia, South Carolina

MF-80, **Unified Simulation of Age and Cold Forming**, *K. Ramsey-Idem*, Fleetguard/Nelson, Inc., Cookeville, Tennessee, *J. Peddiesson*, Tennessee Technological University, Cookeville, Tennessee

MF-90, **Correlation of Weld Temperatures with Material Flow in Solid-State Friction Stir Welds**, *T.U. Seidel, A.P. Reynolds*, University of South Carolina, Columbia, South Carolina

**Session MC4. Experiments in Fluid Mechanics**

2:45 pm - 4:15 pm  
Room 109

**Co-Chairs:**

S.I. Bakhtiyarov, Space Power Institute  
G.W. Rankin, University of Windsor

FM-122, **Experimental Investigation of Radial Flow Rate Circulation in a Baffled Agitated Tank**, X. Shi, J.M Khodadadi, Auburn University, Y. Li, Zhejiang University, Hangzhou, PRC

HT-34, **A Porous Media Transpiration Thermal System for Re-entry Vehicles**, *F. Ferguson, M. Pryce*, North Carolina A&T State University, Greensboro, North Carolina

FM-81, **Modeling of Automotive Fuel Tank Refilling**, *S.A. Fackrell, M. Mastroianni, G.W. Rankin*, University of Windsor, Windsor, Ontario, Canada, *L. Savoni, K. Amellal*, Kautex Textron, Windsor, Ontario, Canada

\*FM-82, **Development of a Fan Test Facility**, *P. Nourse, M.C. Brown, R. Barron, G.W. Rankin*, University of Windsor, Windsor, Ontario, Canada

MP-6, **Local Velocity Measurements in Liquid Metals by Permanent-Magnet Potential Probe**, *S.I. Bakhtiyarov*, Space Power Institute, Auburn, Alabama, *R.A. Overfelt, S. Teodorescu*, Auburn University, Auburn, Alabama

**Cash Bar/Banquet**

6:30 pm - 9:00 pm  
SWEETBAY

**April 18, 2000 (Tuesday)**

**Session TA1. Dynamic & High Strain Rate Phenomenon-I**

8:30 am - 10:00 am  
Room 211

**Co-Chairs:**

H. Mahfuz, Tuskegee University  
D.W. Nicholson, Univ of Central Florida

SM-37, **On an Instability in the High-Strain-Rate Extension of Textile Fibers**, *T.A. Godfrey*, U.S. Army Soldier & Biological Chemical Command, Natick, Massachusetts

SM-72, **Considerations on the Concept of Damage Softening Applied to Ductile Fracture due to Impulsive Load**, *R.F. Moraes*, Bolsista CNPq - Gov. Brasileiro, *D.W. Nicholson*, University of Central Florida, Orlando, Florida

SM-73, **Discussion on the Time History Fracture of Welded Joints under Impulsive Load**, *R.F. Moraes*, Bolsista CNPq – Gov. Brasileiro, *D.W. Nicholson*, University of Central Florida, Orlando, Florida

\*SM-117, **Effect of Microstructure on Dynamic Fracture Resistance of Ceramic Composites**, *J. Zhai*, *M. Zhou*, Georgia Institute of Technology, Atlanta, Georgia

SM-104, **High Strain Rate Impact Response of Traditional and Reinforced Core Sandwich Composites**, *U.K. Vaidya*, *R. Rodgers*, *M.V. Hosur*, *H. Mahfuz*, *S. Jeelani*, Tuskegee University, Tuskegee, Alabama

## Session TA2. Micromechanics

8:30 am – 10:00 am  
Room 110

### Co-Chairs:

*I. Jasiuk*, Georgia Institute of Tech  
*S. Graham*, Sandia National Labs

MM-67, **The Effect of Random Fiber Distributions on the Transverse Thermal Conductivity of Composites with Imperfect Interfaces**, *S. Graham*, *D.L. McDowell*, Georgia Institute of Technology, Atlanta, Georgia

\*MM-123, **Measuring the Mechanical Properties of Individual Nanostructures by In-Situ TEM – A Novel Approach towards Nanomechanics**, *Z.L. Wang*, Georgia Institute of Technology, Atlanta, Georgia

SM-93, **Ridding Elastic Configurations of Stress Singularities**, *G.B. Sinclair*, Carnegie Mellon University, Pittsburgh, Pennsylvania

MM-49, **Scale and Boundary Conditions Effects on the Thermal Conductivity of Periodic Two-dimensional Composites**, *M. Jiang*, *I. Jasiuk*, Georgia Institute of Technology, Atlanta, Georgia, *M. Ostoja-Starzewski*, Institute of Paper Science and Technology, Atlanta, Georgia

\*MM-64, **Computer Simulation of Sliding Hydroxylated Alumina Surfaces**, *D.J. Mann*, *W.L. Hase*, Wayne State University, Detroit, Michigan

## Session TA3. Topics in Dynamics and Control-I

8:30 am – 10:00 am  
Room 208

### Co-Chairs:

*George Flowers*, Auburn University  
*John Cochran*, Auburn University

DC-101, **A Determination of Damping Rates for a Laminated Beam Using Finite Elements**, *S.A. Trogon*, *K.L. Moen*, University of Minnesota, Duluth, Minnesota

DC-10, **Adaptive Aerostructures for Subscale Aircraft**, *Ron Barrett*, Auburn University, Auburn, Alabama

DC-39, **Optimum Mounting Locations for Shock-Protection of Fragile Components**, *S. Goyal*, Lucent Technologies Bell Laboratories, Murray Hill, New Jersey, *J.M. Papadopoulos*, Rexnord Technical Services, West Milwaukee, Wisconsin

DC-23, **Multibody Simulation of a Helicopter Rotor Head**, *Y.-M. Cheng*, *J.E. Cochran*, Auburn University, Auburn, Alabama

DC-115, **The Problem of Identification of Rotor Unbalance**, *Y.L. Menshikov*, Dnienropetrovsk University, Dnienropetrovsk, Ukraine

**Session TA4. Structural Mechanics-I**

8:30 am - 10:00 am  
Room 112

**Co-Chairs:**

A.R. Kukreti, University of Oklahoma  
Arockiasamy, Florida Atlantic University

CV-58, **Dynamic Analysis of Steel Frames with Semi-Rigid Connections**, *A.R. Kukreti, A. Abolmaali*, University of Oklahoma, Norman, Oklahoma

CV-69, **Computational Modeling of CFRP Retrofitted Concrete and Masonry Wall Response**, *A. Gopinath, C. Mullen*, University of Mississippi, Oxford, Mississippi

CV-4, **Finite Element Analysis of Steel-Plate-Bonded-Concrete**, *P. Tharitimanont, M. Arockiasamy, L. Carlsson*, Florida Atlantic University, Boca Raton, Florida, *M. Shahawy*, Florida Department of Transportation, Tallahassee, Florida

CV-114, **Longitudinal Stiffener Design of Box Girder Compression Flanges**, *C.H. Yoo, B.H. Choi, E.M. Ford*, Auburn University, Auburn, Alabama

CV-3, **Debond Test of Steel Plate Bonded with Concrete Exposed to Harsh Environment**, *P. Tharitimanont, M. Arockiasamy, L. Carlsson*, Florida Atlantic University, Boca Raton, Florida, *M. Shahawy*, Florida Department of Transportation, Tallahassee, Florida

**Session TA5. Topics in Heat Transfer**

8:30 am - 10:00 am  
Room 109

**Co-Chairs:**

W.E. Lear, University of Florida  
Dan Harris, Auburn University

HT-91, **Design Analysis of a Heat-Driven Jet Pumped Cooling System for Space Thermal Management Applications**, *J.W. Nord, W.E. Lear, S.A. Sherif*, University of Florida, Gainesville, Florida

\*HT-31, **A Least Squares Finite Element Formulation for Conjugate Heat Transfer Problems**, *N.B. Edgar*, Arkansas State University, Jonesboro, Arkansas

\*HT-111, **Heat Transfer Simulation in Directional Solidification Castings**, *D. Wang*, Space Power Institute, Auburn, Alabama *T. Overfelt*, Auburn University, Auburn, Alabama

\*HT-43, **A Tutorial on the Recursive-Power-Series Approach to Solving Banded Matrices Encountered in Thermal and Fluid Systems**, *D.K. Harris*, Auburn University, Auburn, Alabama

\*HT-45, **Solution of a Heat Conduction Problem Using a Center of Mass Analogy**, *J.E. Hasbun, G.E. Keller*, State University of West Georgia, Carrollton, Georgia, *B. Hojjatie*, Institute of Paper Science and Technology, Atlanta, Georgia

**Coffee/Refreshments Break**

10:00 am - 10:30 am

**Keynote Lecture-II**

10:30 am - 11:30 am

Chair:

Hareesh Tippur, Auburn University

**Intersonic Shear Failure of Heterogeneous Materials and Composites**

by **A.J. Rosakis**, California Institute of Technology, CA

**Conference Luncheon**

11:30 am - 1:00 pm

SAGE

**Session TB1. Dynamic & High Strain Rate Phenomenon-II**

1:00 pm - 2:30 pm

Room 211

Co-Chairs:

A.H. Mayer, AF RL

M. Zhou, Georgia Institute of Technology

\*SM-66, **Impact Damage Evolution in Composite Laminates to an Energy-Significant Critical Event Below the Ballistic Limit**, *A.H. Mayer*, Air Force Research Laboratory, WPAFB, Ohio, *H. Patts*, *B.-L. Lee*, Pennsylvania State University, State College, Pennsylvania

\*SM-99, **Investigation of Dynamic Crack Growth in a Functionally Graded Material**, *C.-E. Rousseau*, *H.V. Tippur*, Auburn University, Auburn, AL

\*SM-124, **An Infrared High Speed Camera System for the Visualization and Measurement of Transient Temperature Fields Resulting During Dynamic Deformation and Failure of Materials**, *A.J. Rosakis*, *P.R. Gurudu*, *G. Ravichandran*, California Institute of Technology, Pasadena, California, *A.T. Zehnder*, Cornell University, I thaca, New York.

\*SM-118, **An Experimental Characterization of the Dynamic Impact of Failure Behavior of Mortar**, *L. D. Grote*, *S.W. Park*, *M. Zhou*, Georgia Institute of Technology, Atlanta, Georgia

SM-46, **Studies on the Influence of 3D Reinforcement of S2-Glass/Vinyl Ester Composites under Low-Velocity Impact Fatigue Loading**, *M.V. Hosur*, *U.K. Vaidya*, *A. Abraham*, *S. Jeelani*, Tuskegee University, Tuskegee, Alabama

**Session TB2. Topics in Dynamics and Control-II**

1:00 pm - 2:30 pm

Room 208

Co-Chairs:

D. Beale, Auburn University

Ron Barrett, Auburn University

\*DC-131, **NSF Civil & Mechanical Systems Programs & Funding Opportunities**, Alison Flatau, National Science Foundation, Arlington, VA (invited)

SM-98, **Complex Wave-Number Dispersion Analysis of Stabilized Finite Element Methods for Acoustic Fluid - Structure Interaction**, *L.L. Thompson, S. Sankar*, Clemson University, Clemson, South Carolina

\*DC-15, **Optimization of the Leaky LMS Algorithm for Single Source, Single Point Noise Cancellation**, *D.A. Cartes, L.R. Ray, R.D. Collier*, Dartmouth College, Hanover, New Hampshire

\*MP-76, **Electromagnetic Levitator at Space Power Institute, Auburn University**, *B.O. Ciocirlan, D.G. Beale, D.B. Marghitu*, Auburn University, Auburn, Alabama

\*DC/SM-57, **Discrete Series Analysis in Applied Mechanics**, *H.E. Kimmel*, Ebara International Corporation, Sparks, Nevada

### **Session TB3. Soils and Structures**

1:00 pm - 2:30 pm  
Room 112

#### **Co-Chairs:**

G. Vallabhan, Texas Tech University  
M. Chowdhury, AERDC

\*CV-17, **Tectonic Movement and Its Implication in the Structural Engineering Design**, *M. Chowdhury*, U. S. Army Engineer Research & Development Center, Vicksburg, Mississippi

\*CV-41, **Modeling and Analysis of an Asymmetric Mine-Soil-Structure Interaction Problem with Mine Buried in Sand Versus Wet Tuff**, *A.D. Gupta*, U. S. Army Research Laboratory, Aberdeen Proving Ground, Maryland

CV-68, **Soil-Structure Interaction Issues for Three Dimensional Computational Simulations of Nonlinear Seismic Response**, *I.S. Ismail, C. Mullen*, University of Mississippi, Oxford, Mississippi

\*CV-18, **A Simplified Method for Obtaining Solutions to Complex Structures Utilizing AASHTO Procedure I Seismic Analysis for Highway Bridges**, *J.-J. Chyu*, HNTB Corporation, New York, New York

\*CV-88, **The Numerical-Analytical Calculation of the Pile Construction by the Splain-Averaging Method**, *S.Y. Zaginaichenko, D.V. Schur*, Institute for Problems and Materials Science of UAS, Kiev, Ukraine, *R.A. Lagoshnyi, N.V. Matysina*, Institute of Hydrogen and Solar Energy, Kiev, Ukraine

### **Session TB4. Materials Processing**

1:00 pm - 2:30 pm  
Room 109

#### **Co-Chairs:**

R. A. Overfelt, Auburn University  
Jay Khodadadi, Auburn University

MP-103, **Effects of Doping Impurities on the Dislocation Generation in GaAs Crystals Grown from the Bridgman Growth Process**, *X.A. Zhu, C.T. Tsai*, Florida Atlantic University, Boca Raton, Florida

\*MP-75, **Microstructure and Segregation of Directionally Solidified Superalloy PWA 1484**, *L. Li, H.S. Whitesell, R.A. Overfelt*, Auburn University, Auburn, Alabama

MP-77, **Simulation of Fiber Dry Spinning**, *K.W. Chandler, J. Peddieson*, Tennessee Technological University, Cookeville, Tennessee, *S.G. Rochelle*, Eastman Chemical Company, Kingsport, Tennessee

MP-7, **Study of Molten Metal-Polymeric Foam Interface Dynamics in Counter Gravity Casting Process**, *S.I. Bakhtiyarov*, Space Power Institute, Auburn, Alabama, *R.A. Overfelt*, Auburn University, Auburn, Alabama, *A. Alagarsamy*, Citation Corporation, Birmingham, Alabama, *B. Vatankhah*, Citation Foam Casting Company, Columbiana, Alabama

MP-8, **Advances in Counter Gravity Lost Foam Casting Process**, *S.I. Bakhtiyarov*, Space Power Institute, Auburn, Alabama, *R.A. Overfelt*, Auburn University, Auburn, Alabama, *A. Alagarsamy*, Citation Corporation, Birmingham, Alabama, *B. Vatankhah*, Citation Foam Casting Company, Columbiana, Alabama

### Coffee/Refreshments Break

2:30 pm - 2:45 pm  
Rosemary

### Session TC1. Fracture & Failure Mechanics

2:45 pm - 4:15 pm  
Room 211

#### Co-Chairs:

C.D. Wilson, Tennessee Tech University  
J.M. Fragomeni, Ohio University

SM-94, **Logarithmic Stress Singularities in 2D and 3D Elasticity**, *G.B. Sinclair*, Carnegie Mellon University, Pittsburgh, Pennsylvania

SM126, **Hot Deformation Behavior of Al 6061 Alloy/SiCp Composite**, *A.E.M. Khourshid*, Menoufia University, Egypt

SM-35, **The Plastic Deformation Mechanisms and Fracture Behaviour of Age Hardened Aluminium-Lithium-Zirconium Alloys**, *J.M. Fragomeni*, Ohio University, Athens, Ohio

\*SM-112, **Hydrostatic Tensile Stress Effects on Metal Plasticity**, *C.D. Wilson*, Tennessee Technological University, Cookeville, Tennessee

### Session TC2. Inverse Methods in Mechanics

2:45 pm - 4:15 pm  
Room 208

#### Co-Chairs:

A. Kassab, University of Central Florida  
A. Emery, University of Washington

\*HT-54, **Identifying Multi-Dimensional Surface Heat Transfer Coefficient Maps by a Regularized Inverse BEM Approach**, *E. Divo, A. Kassab, J. Kapat*, University of Central Florida, Orlando, Florida

HT-33, **Estimating Contact Resistance of Electronic Chips by Transient Surface Temperature Measurements**, *A.F. Emery*, University of Washington, Seattle, Washington

DC-29, **The Damping Identification for Certain SDOF Systems**, *D.V. Iourtchenko, L. Duval, M.F. Dimentberg*, Worcester Polytechnic Institute, Worcester, Massachusetts

SM-71, **Inverse Problem in Probabilistic Fracture Mechanics: Crack Distributions from Strength Distributions**, *Y. Ahn, D.W. Nicholson, M.C. Wang, P. Ni*, University of Central Florida, Orlando, Florida

\*SM-87, **Fast Multipole BEM for Elasticity Using the FFT**, *J.D. Richardson, L.J. Gray, T. Kaplan*, ONRL, Oak Ridge, Tennessee

\*HT-89, **The Calculation of Temperature Field at Local Change of Surface Coefficient of Heat Exchange**, *S.Y. Zaginaichenko, D.V. Schur*, Institute for Problems and Materials Science of UAS, Kiev, Ukraine, *Y.M. Kolyano, R.A. Lagoshnyi N.V. Matysina*, Institute of Hydrogen and Solar Energy, Kiev, Ukraine

### Session TC3. Structural Mechanics-II

2:45 pm – 4:15 pm  
Room 112

**Co-Chairs:**

C.H. Yoo, Auburn University  
N. Madsen, Auburn University

CV-62, **Shapes Assumed by Extensible Cables**, *N. Madsen*, Auburn University, Auburn, Alabama

CV-106, **Nonlinear Guy-Mast Interaction Due to Wind Forces**, *R. Kaul, C.V.G. Vallabhan, K.C. Mehta*, Texas Tech University, Lubbock, Texas

CV-107, **2-D Nonlinear Analysis of Long Cables**, *C.V.G. Vallabhan*, Texas Tech University, Lubbock, Texas

CV-108, **Nonlinear 3-D Analysis of Cables Subjected to Wind Loads**, *C.V.G. Vallabhan*, Texas Tech University, Lubbock, Texas

\*SM-132, **Design and Analysis of Composite Pipe Joints under Bending**, *V. Podolnyy, V.L. Bogun, G.V. Savka, A.V. Velichko*, Zaporizhzhya State Medical University, Ukraine

### Policy Committee Meeting

4:15 pm – 5:00 pm  
Room 211