AUTHORS'S PREPARATION ROOM
COMMITTEE ROOM, DBH&CC
June 28: 8:00 AM - 1:00 PM
June 29, 30: 8:00 AM - 5:00 PM

HOSPITALITY ROOM FOR
ACCOMPANYING PERSONS
CONFERENCE ROOM D, DBH&CC
8:00 AM - 12:00 NOON

Sunday June 27, 1999

4:00 PM - 8:00 PM, Registration
Lobby, DBH&CC
6 - 8 PM, Welcome Reception, Cash Bar
Commonwealth Dining Room, DBH&CC

Monday June 28, 1999

Registration
7:30 AM - 5:00 PM
Old Dominion Ballroom, Squires

Monday Morning: 8:00 AM - 9:50 AM
(Session M1G begins at 7:38 AM)

RECENT DEVELOPMENTS IN
ANISOTROPIC ELASTICITY

Organizers: T.C.T. Ting and D.M. Barnett
Session M1A. 8:00 AM - 9:50 AM
Room: Brush Mountain A, Squires
Co-Chairs: D. M. Barnett and K. C. Wu

1. Generalization of Stroh's Formalism to Self-Similar Problems in Elastodynamics, K. C. Wu.
2. The Method of Fundamental Solutions for Problems in Anisotropic Materials, J. R. Berger, R. Shepherd and A. Karageorghis.
3. Deconstructing Plane Anisotropic Elasticity, Wan-Lee Yin.
4. On Nix's Theorem for Two Skew Dislocations in Anisotropic Elastic Half-Spaces and Bimaterials, T. C. T. Ting and D. M. Barnett.
5. The Zero-Moment Condition Associated with Stroh's Solution for Straight Dislocations in Anisotropic Linear Elastic Media, D. M. Barnett and Huajian Gao.

COUPLED FIELD PROBLEMS
IN SMART STRUCTURES

Organizer: H. Irschik
Session M1B. 8:00 AM - 9:50 AM
Room: 341 Squires
Co-Chairs: H. Irschik and S. Vel

1. Tensor Analysis Based Modeling of Coupled Fields in Mechanical and Electrostatic Systems, K. Schlacher and A. Kugi
2. Derivation of the governing equations for piezothermoelastic magnetised materials from the laws of thermodynamics, A. K. Belyaev
3. An electromechanically coupled theory for piezoelastic beams taking into account the charge equation of electrostatics, M. Krommer and H. Irschik
4. Group interpretation of coupling phenomena, J.-F. Pommaret
5. Classical Field Theories and Geometry, A. Prechtl

EXPERIMENTS IN FRACTURE MECHANICS
In Honor Of
Professor C. W. Smith

Organizer: A. Shukla
Session M1C. 8:00 AM - 9:50 AM
Room: Conf. Room E, DBH&CC
Co-Chairs: J.W. Dally and I.M. Daniel

1. Dynamic Ductile Fracture of 7075-T6 SEN Specimens-An Experimental Analysis, M.T. Kokaly, Jonghee Lee and A.S. Kobayashi
2. Damage Mechanism in Solid Propellants, Cesar Sciammarella and F. Sciammarella
3. Crack Tip Strain Field in Solid Propellant Measured by a Microspeckle Technique, Fu-Pen Chiang and Sheng Chang
4. Effect of Near Tip Damage on the Initiation Fracture Toughness of a Particulate Composite, C. T. Liu and T. C. Miller
5. Fracture Processes in Two Phase Compound Materials and Associated Caustics, K.P. Hermann, F. Ferber and A. Noe

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RECENT DEVELOPMENTS IN
THE STUDY OF IMPACTS
ON COMPOSITE MATERIALS

Organizers: S. Abrate and G. Schoeppner
Session M1D. 8:00 AM - 9:50 AM
Room: Conf. Room C, DBH&CC
Co-Chairs: G.A. Schoeppner and M.S. Hoo Fatt

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1. Modeling of the Ballistic Behavior of Gradient Design Composite Armors, A. Zavaliangos, J. Jovivi. and K. F. Ko
2. Effects of Panel Thickness and Impact Obliquity on Ballistic Limit Velocities for Graphite-Epoxy Composite Panels, J.D. Yatteau, G. W. Recht, C.T. Sun and D.L. Dickinson
3. Protecting Spacecraft Against Orbital Debris Impact Damage Using Composite Materials, W. P. Schonberg
4. 3D Simulations of Impact Induced Damage in Composite Structures Using the Parallelized SPH Method, David F. Medina and J. K. Chen
5. On the Effect of Adhesive Stiffness on the Behavior of Ceramic/Metal Lightweight Armours. R. Zaera, S. Sánchez-Sáez, J. L. Pérez-Castellanos and C. Navarro

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MECHANICS AND MECHANISMS OF
FAILURE OF INTERFACES
IN ENGINEERING MATERIALS
Sponsor: Wave Propagation Committee

Organizer: S.A. Meguid
Session M1E. 8:00 AM - 9:50 AM
Room: Conf. Room A, DBH&CC
Co-Chairs: S.A. Meguid and J.F. Silva Gomes

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1. On the Dynamic Behaviour of Interacting Microdefects in Advanced Composite Materials, S.A. Meguid and X.D. Wang
2. Interfacial Partial Debonding and its Influence on Elasticity and Plasticity of a Two-Phase Composite, S. F. Zheng, M. Denda and G. J. Weng
3. Decohesive Interface Model for Fiber Pullout, H.L. Schreyer and A. Peffer
4. Elastothermodynamic Analysis of a Griffith Crack, Vikram K. Kinra and Joseph E. Bishop
5. Mechanics of Thermal Barrier Coatings, Martin Andritscsky and V. Teixeira

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NONSMOOTH/NONCONVEX MECHANICS
In Honor of
Professor P. D. Panagiotopoulos

Organizers: D.Y. Gao, R.W. Ogden and G.E. Stavroulakis
Session M1F. 8:00 AM - 9:50 AM
Room: Rear Auditorium, DBH&CC
Co-Chairs: R.W. Ogden

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1. Finite Element Approximation and the Numerical Realisation of Hemivariational Inequalities, Jaroslav Haslinger
2. Variational-Hemivariational Inequalities in the Sense of P. D. Panagiotopoulos and Applications, Dumitru Motreanu
3. Global Optimization of a High Speed Civil Transport Configuration, Steven E. Cox, Raphael T. Haftka, Chuck A. Baker, Bernard Grossman, W.H. Mason and Layne Watson
4. Estimating Prelaunch Stresses in a High Altitude Balloon Using a Relaxed Energy Approach, William Collier
5. On Lagrange Multiplier Formulations for the Finite Element Solution of the Two-Body Contact Problem, Panos Papadopoulos and Jerome M. Solberg

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NONLINEAR VIBRATIONS
AND PERTURBATION METHODS
In honor of
Professor Ali Nayfeh

Organizer: D. Mook
Session M1G. * 7:38 AM - 9:50 AM
Room: Front Auditorium, DBH&CC
Co-Chairs: M. Dimentberg and B. Balachandran

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1. An Advanced Friction Damper Model for the Dynamics of Large-Scale Structural Systems, with Application to Bladed-Disks, J. Guillen and C. Pierre
2. On the Identification of Coulomb and Viscous Friction in Oscillators, J. W. Liang and B. F. Feeny
3. Brake Judder of Cars, A. Ams, C. Schmalfuss and W. Wedig
4. Brake Squeal Modeling, M. Rudolph and K. Popp
5. Passive Vibration Suppression Using Nonlinear Electro-Mechanical Coupling, T. J. Anderson
6. Bifurcation Control Applied to High-Speed Machining, J. Pratt and M. Davies

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PENETRATION & IMPACT PROBLEMS

Session M1H. 8:00 AM - 9:50 AM
Room: Brush Mountain B, Squires
Co-Chairs: D.M. Belk and S. Narayanaswamy

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1. Estimating Target Strength from Penetration Experiments, S.E. Jones, Joseph C. Foster, Jr. and William K. Rule
2. The Effect of Strain-Rate on the Dynamic Expansion of Cylindrical Cavities, Thomas L. Warren
3. A Simple Explanation for Interface Defeat Phenomena of Ceramics/ Metal Targets, Sikhanda Satapathy and Stephan Bless
4. A Theoretical and Experimental Investigation of the Geometrically Nonlinear Transient Elastic-Viscoplastic Response of Clamped Circular Plates to Shock Waves, M. Stoffel, R. Schmidt and D. Weichert
5. Observations of Transonic Crack Velocity at an Anisotropic Metal/Ceramic Interfaces, Jianxin Wu and Vijay Gupta

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ON EXPERIMENTAL INVESTIGATION OF
THE BEHAVIOR OF MATERIALS
AT HIGH STRAIN RATES
"KOLSKY BAR FIFTY YEARS LATER"
In Memory of
the late Professor H. Kolsky

Organizers: R.J. Clifton and J.R. Klepaczko
Session M1I. 8:00 AM - 9:50 AM
Room: Conf. Room F, DBH&CC
Co-Chairs: R.J. Clifton and J.R. Klepaczko

1. Remarks on Kolsky's Activities and His Bar, RJ.Clifton and J.R.Klepaczko
2. Split-Hopkinson Pressure Bar Testing: The Challenge of Stress-State Stability, George T. Gray, III, William R. Blumenthal, Thomas A. Mason and George C. Kaschner
3. Slow Bar, a SHPB for an Unlimited Duration of Measurement, G.Gary and H.Zhao
4. Simulation-supported Tests with the Split-Hopkinson pressure Bar, D. A. Gorham, X. J. Wu and C. B. Bluck
5. An Inverted Kolsky Bar for Materials Testing in Tension at Large Strains, J.R.Klepaczko.

DYNAMICS AND AEROELASTICITY OF FLIGHT VEHICLE AND ROTORCRAFT STRUCTURES

Organizer: L. Librescu
Session M1J. 8:00 AM - 9:50 AM
Room: 345 Squires
Co-Chairs: S.W. Wilson II and T.A. Weisshaar

1. Transonic Limit Cycle Flutter of a High Aspect Ratio Wing - Wind Tunnel Tests and Nonlinear Dynamics Analysis, Hiroshi Matsushita
2. Aeroelastic Tailoring for Active Flexible Wings - New Visitas, Terrence A. Weisshaar
3. Aeroelastic Response and Stability Analysis of Composite Rotor Blade in Forward Flight, Seong Min Jeon and In Lee
4. Active Flutter Control of Aeroelastically Tailored Aircraft Wings Carrying External Stores, Frank H. Gern and Liviu Librescu
5. Dynamic and Flutter Studies of Composite Wing Box Models, R. S. Battoo

MULTISCALE ANALYSIS

Organizers: H. Gao and Y. Huang
Session M1K. 8:00 AM - 9:50 AM
Room: 234 Squires
Co-Chairs: W. Curtin and M. W. Schraad

1. New Bounds for the Response of Nonlinear Composites, J. R. Willis
2. Experimental Determination of the Field of Geometrically Necessary Dislocations Near Grain Boundaries, B. L. Adams
3. A Finite-Deformation Theory of Strain Gradient Plasticity, H. Q. Jiang, N. Hu, T. F. Guo, K. C. Hwang and Y. Huang
4. Scale Dependence of Yield Strength of Submicron Polycrystals due to Configurational Entropy, W. Yang and Q. Yang
5. Rare-Event Molecular Dynamics for Multiscale Mechanics, J. R. Jameson and K. Cho

NOISE AND VIBRATION CONTROL FOR LAUNCH VEHICLES AND SATELLITE APPLICATIONS

Organizers: D. Leo and D. Sciulli
Session M1L. 8:00 AM - 9:28 AM
Room: 219 Squires
Co-Chairs: D. Sciulli and C. Hall

1. Developing and Flying the World's First Whole-Spacecraft Launch Vibration Isolation System, Keith K. Denoyer
2. Satellite Ultraquiet Isolation Technology Experiment (SUITE): Ground Test Results and Satellite Integration, Eric H. Anderson, John P. Fumo and R. Scott Erwin
3. Whole-Spacecraft Vibration Isolation Systems for Small Launch Vehicles, Conor D. Johnson and Paul S. Wilke
4. An Earth to Orbit Simulation of Hybrid Launch Isolation, Gregory S. Agnes

FRACTURE AND FATIGUE APPLICATIONS IN AIRCRAFT INDUSTRY

Organizers: S. Muju and T. Nicholas
Session M1M. 8:00 AM - 9:50 AM
Room 236 Squires
Co-Chairs: T. Nicholas

1. Fracture Mechanics Analysis of the Nene-X Engine Turbine Disc, S. M. Cheng, W. Beres and A. K. Koul
2. High Frequency Fatigue Thresholds in Turbine Engine Alloys, B.L. Boyce, J.P. Campbell, R.O. Ritchie, S.A. Padula II, A. Shyam and W.W. Milligan
3. Using the FRANC3D Program for Predicting the Fatigue Life of Gas Turbine Engine Components, Paul Wawrzynek, Bruce Carter and Anthony Ingraffea
4. Computational Micromechanics Model of Composite Fracture Under Compression, B. D. Garland, I. J. Beyerlein and L. S. Schadler
5. Fatigue Crack Growth in Ti-6Al-4V: Mechanisms and Mechanics Models, W. O. Soboyejo, A. B. O. Soboyejo, M. Foster, V. Sinha, S. Shademan and N. Katsube

MATHEMATICAL METHODS

Session M1N. 8:00 AM - 9:50 AM
Room: Conference Room G, DBH&CC
Co-Chairs: D. Riggins and R. Gupta

1. The Equilibrium Profile of a Two-Dimensional Electrically Conducting Liquid Bridge Centered Between High Frequency Inductors, John C. Petrykowski
2. On the High-Order, Uniformly Valid Approximations of the Viscous Flow Past a Sphere in a Uniform Stream, Shi-Jun Liao

3. Effect of External Pressure Fluctuations on the Deformation Behavior of Bubbles in an Elastic-Plastic Medium, G. Terrones, P.A. Gauglitz, C.L. Aardahl and D.P. Mendoza
4. Microstructure Optimization in Forging Processes Using Parametric Sensitivity Analysis, Zhenyan Gao and Ramana V. Grandhi

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9:40 AM - 10:20 AM Refreshment Break
Old Dominion Ballroom, Squires

Monday Morning: 10:20 AM - 12:10 PM
*(Unless Otherwise Noted)

RECENT DEVELOPMENTS
IN ANISOTROPIC ELASTICITY

Organizers: T.C.T. Ting and D.M. Barnett
Session M2A. 10:20 AM - 12:10 PM
Room: Brush Mountain A, Squires
Co-Chairs: H. Gao and M.L. Dunn

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1. Three-Dimensional Interface Cracks in Anisotropic Bimaterials, Jianmin Qu and Yibin Xue.
2. Bridged Interface Cracks in Anisotropic Bimaterials, Luqun Ni and Sia Nemat-Nasser.
3. Anisotropic Bimaterial Interface Corner Fields and Their Use for Correlating Fracture Initiation via Small-Scale Phenomena, M. L. Dunn, P. E. W. Labossiere and Shawn J. Cunningham.
4. Driving Force for Air-Filled Cracks in Piezoelectric Ceramics, C. C. Fulton and Huajian Gao.
5. Commensurate and Incommensurate Elastic Instability in Morphological Evolution of Coherent Precipitates, Jong K. Lee.

COUPLED FIELD PROBLEMS
IN SMART STRUCTURES

Organizer: H. Irschik
Session M2B. 10:20 AM - 12:10 PM
Room: 341 Squires
Co-Chairs: M. Ahmadian and G. Kirby

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1. Modeling and Control of Electrostatic Coupled Field Transducers, A. Kugi, K. Schlacher, M. Kaltenbacher and R. Lerch
2. 3D Simulation of Coupled Magnetomechanical Systems, M. Schinnerl, M. Kaltenbacher, J. Schöberl, R. Lerch and U. Langer
3. Optimal Control of Rotors in Anisotropic Magnetic Bearings, O. Song, H.S. Kang and L. Librescu
4. Numerical Simulation of Adaptive Wing Section in Transonic Flow, B. A. Grohmann and B. Kröplin
5. Analytical Solutions for the Generalized Plane State of Deformation of Piezothermoelastic Laminated Plates, S. S. Vel and R. C. Batra

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EXPERIMENTS IN FRACTURE MECHANICS
In Honor Of
Professor C. W. Smith

Organizer: A. Shukla
Session M2C. 10:20 AM - 12:10 PM
Room: Conf. Room E, DBH&CC
Co-Chairs: A.S. Kobayashi and C.J. Astill

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1. Dynamic Fracture of Inclined and Curved Interfaces, Mahesh Kavaturu and Arun Shukla
2. Experimental Determination of K1 for a Short Internal Crack, K. Bearded, J. W. Dally and R. J. Sanford
3. Fracture Mechanics Methodology to Predict the Onset of Widespread Fatigue Damage in Aircraft Structure, Charles E. Harris and James C. Newman, Jr.
4. Ductile Fracture of Panels. Application to Containment Casings in Aeroengines, C. Ruiz, J. L. Medina Velarde
5. Tri-axial Dynamic Compression Experiment Using a Novel Hopkinson Technique, S. Nemat Nasser and Jon Isaacs

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RECENT DEVELOPMENTS IN
THE STUDY OF IMPACTS
ON COMPOSITE MATERIALS

Organizers: S. Abrate and G. Schoeppner
Session M2D. 10:20 - 12:32 PM
Room: Conf. Room C, DBH&CC
Co-Chairs: C.N. Ugena and S. Abrate

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1. Static and Dynamic Crush of Composite Tubes, M.M. Chadwick, A.G. Caliskan, X. Han and L.D. Favro
2. Development and Analysis of a Composite Plate Crushing Test Technique for Assessing Energy Absorption, Ari G. Caliskan, Chin Chan Chu and Margaret M. Chadwick
3. Energy-Absorbing Capacity of Grid-Domed Textile Composites, T. X. Yu., X. M. Tao and P. Xue
4. Experimentally and Numerically Determining the Contact Force History of a Composite Plate Impacted by a Soft Projectile, A. Bennani, E. Jacquelin, G. Lagarde, P. Hamelin
5. New Functionalities for PAMCRASHTM Multi-Layered Multimaterial Element, Daniel Coutellierl and Patric Rozycki
6. The Impact of Sliding Blades in the Rotary Compressor, Y. M. Huang and Y. S. Liaw

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STRESSES AND FRACTURE
IN ADHESIVE BONDS
In Honor Of
Professor Max Williams

Organizers: D.A. Dillard and K. Liechti
Session M2E. 10:20 AM - 12:10 PM
Room: Conf. Room A, DBH&CC
Co-Chairs: D. A. Dillard and G. D. Roberts

1. A Fracture Mechanics Analysis of Adhesive Bond Failure, H. M. Jensen
2. Ductile/Brittle Behavior of an Interface Crack in Layered Materials, S. X. Mao
3. Crack Path Selection in Adhesively Bonded Joints, B. Chen, D. A. Dillard and J. G. Dillard
4. Piezo-Induced Fatigue of Adhesive Joints, C. L. Sanders, S. M. Spearing, M. C. Shaw, W. Winterhalter, S. J. Thomas and B. D. Boehm
5. Shear-Induced Toughening in Bonded Joints: Experiments and Analysis, J. G. Swadener, K. M. Liechti and Y.-M. Liang

NONSMOOTH/NONCONVEX MECHANICS
In Honor of
Professor P. D. Panagiotopoulos

Organizers: D.Y. Gao, R.W. Ogden and G.E. Stavroulakis
Session M2F. 10:20 AM - 12:10 PM
Room Rear Auditorium, DBH&CC
Co-Chairs: J. Haslinger and D. Motreanu

1. Recent Advances in Global Optimization, Panos Pardalos
2. A Hybrid Sensitivity Method for Optimization Based Engineering Design, John Burns
3. The Magnetostatic Boundary Value Problem, Giles Auchmuty
4. Smoothing Technique vs Nonlinear Rescaling in Discrete Minimax, Roman A. Polyak, Igor Griva, Jaroslaw Sobieszczanski-Sobieski
5. Transformation Techniques in Sensitivity Computations for Elliptic Systems, Lisa Stanley

NONLINEAR VIBRATIONS
AND PERTURBATION METHODS
In honor of
Professor Ali Nayfeh

Organizer: D. Mook
Session M2G. 10:20 AM - 12:10 PM
Room: Front Auditorium, DBH&CC
Co-Chairs: C. Pierre and W. Wedig

1. On the Calculation of Stationary Solutions of Multi-Dimensional Fokker-Planck Equations by Orthogonal Functions, U. Von Wagner
2. Applications of the Volterra Series to the Analysis of Nonlinear Layered Soil Deposits, L. E. Suarez and J. Arroyo
3. Combination Resonance of a Rigid Rotor Suspended by a High-Temperature Superconducting Bearing, T. Sugiura, K. Matsunaga and M. Yoshizawa
4. Transient Self-Synchronization in Rotating Machinery, M. Dimentberg, E. Cobb and J. Mensching
5. Analytical Methods of Nonsynchronous Response and Bifurcation of Nonlinear Rotordynamics, X. Wang and S. Noah

ADVANCES IN THE CONTINUUM
MECHANICS AND THERMODYNAMICS
OF MATERIAL BEHAVIOR
In Honor Of
Professor Roger Fosdick

Organizer: Y.-C. Chen
Session M2H. 10:20 AM - 12:10 PM
Room: Brush Mountain B, Squires
Co-Chairs: R. Batra and M.E. Gurtin

1. Simple Problems for Smart Materials, Stuart S. Antman
2. Theory for Atomic Diffusion on Fixed and Deformable Crystal Lattices, Eliot Fried and Shaun Sellers
3. The Folding Habits of Anisotropically Compressed Thin-Film Diaphragms, Gustavo Gioia, Antonio DeSimone and Alberto M. Cuiti
4. New Existence Theorems in Nonlinear Elastostatics via Global Continuation, Timothy J. Healey
5. Remarks about Analysis and Simulation of Grain Boundary Systems, David Kinderlehrer

ON EXPERIMENTAL INVESTIGATION OF
THE BEHAVIOR OF MATERIALS
AT HIGH STRAIN RATES
"KOLSKY BAR FIFTY YEARS LATER"
In Memory of
the late Professor H. Kolsky

Organizers: R.J. Clifton and J.R. Klepaczko
Session M2I. 10:20 AM - 12:10 PM
Room: Conf. Room F, DBH&CC
Co-Chairs: J. Najar and S. Nemat-Nasser

1. On the Partition of Plastic Work into Heat and Stored Work: A Kolsky Bar Approach, J. Hodowany, G. Ravichandran, A. J. Rosakis and P. Rosakis
2. Enhanced Fracture Energy at Spalling of Ceramic Bars, J.Najar, M.Muller-Bechtel and V.V.Silberschmidt
3. Dynamic Fracture Studies Using Kolsky Bar, D.Rittel
4. Coupled Hopkinson Pressure Bars and Plates Techniques to Evaluate Dynamic Toughness Properties of Materials, H.Couque
5. Kolsky Bars in Tension and compression - a comparison for Steel Welds, V. Kothnur and R. J. Clifton

DYNAMICS AND AEROELASTICITY
OF FLIGHT VEHICLE
AND ROTORCRAFT STRUCTURES

Organizer: L. Librescu
Session M2J. 10:20 AM - 12:10 PM
Room: 345 Squires
Co-Chairs: R.K. Kapania and H. Matsushita

1. Wing Vibrations Using FEM and Equivalent Plate Models, Rakesh K. Kapania and Youhua Liu
2. Nonlinear Aeroelasticity and Flight Dynamics of Aircraft in Subsonic Flow, Mayuresh J. Patil, Dewey H. Hodges and Carlos E.S. Cesnik
3. Non-Linear Aeroelastic Stability of Functionally Graded Panels, Victor F. Poterasu and Alexandru Stere
4. Analysis of an Actively Twisted Rotor by Multy-Body Global Modeling, Gian Luca Ghiringhelli, Pierangelo Masarati and Paolo Mantegazza
5. Vibration and Stability of Wing-Rotor System for Tiltrotor Aircraft Application: Implications of Gyroscopic Effects, Ohseop Song, Hyuck-Dong Kwon and Liviu Librescu

MULTISCALE ANALYSIS

Organizers: H. Gao and Y. Huang
Session M2K. 10:20 AM - 12:10 PM
Room: 234 Squires
Co-Chairs: H. Gao and M.W. Schraad

1. A Multiple Scale Approach to the Bridging of Micromechanics to Gradient Plasticity Models, W. K. Liu
2. A Study of Multiscale Dynamics of Dynamic Crack Tip Branching via Virtual-Internal-Bond Model, P. A. Klein
3. Shearing Ductile Metal Sheet: From Microscale to Macroscale, M. Li
4. Appliations of Crystal Plasticity to Metal Forming, P. D. Wu and S. R. MacEwen
5. Crack Bridging Phenomenon in a Heterogeneous Material, C. Liu and M. G. Stout

NOISE AND VIBRATION CONTROL FOR LAUNCH VEHICLES AND SATELLITE APPLICATIONS

Organizers: D. Leo and D. Sciulli
Session M2L. 10:20 AM - 12:10 PM
Room: 219 Squires
Co-Chairs: S. Griffin and M. Hollis

1. Current Acoustic Work at the Air Force Research Lab, Steven Griffin
2. Structural-Acoustic Control of Composite Payload Fairings for Interior Noise Reduction, Roger M. Glaese, Eric H. Anderson and Steven Griffin
3. Energy Requirements for Active Acoustic Control of Launch Vehicle Payload Fairings, Donald J. Leo
4. Sensuator Design and Implementation for Active Structural-Acoustic Control, Robert J. Pascal and David W. Miller
5. Authority of Piezoelectric Actuators Controlling Rocket Payload Fairing Structural Vibrations and Acoustics, Christopher Niezrecki and Harley H. Cudney

FRACTURE AND FATIGUE APPLICATIONS IN AIRCRAFT INDUSTRY

Organizers: S. Muju and T. Nicholas
Session M2M. 10:20 AM - 11:48 AM
Room; 236 Squires
Co-Chairs: S. Muju

1. Multiaxial Random Fatigue Life Prediction of Metallic Structures from Spectral Data, Xavier Pitoiset and Andre Preumont
2. Fatigue Analysis of Fretting in Aircraft Structures, G. Harish, P. A. McVeigh, C. Tieche and T. N. Farris
3. Crack-Tip Constraint Effects in Power Law Creeping Structures Subject to Intergranular Cracking, B. N. Nguyen, P. Onck and E. Giessen
4. Sensitivity of Two Multiaxial Fatigue Crack Initiation Methods on Weight Factors of Normal Stress or Strain, V. Ogarevic

MATHEMATICAL/COMPUTER MODELS OF SYSTEMS

Session M2N. 10:20 AM - 12:10 PM
Room: Conference Room G, DBH&CC
Co-Chairs: B. Soni and S. Thangjitham

1. Computational Modeling of the Microstructure and Molecular Composition of a Cell Membrane, A.A. Spector, M. Ameen, P.G. Charalambides, and A.S. Popel
2. A Higher-Order Theory Accounting for Through-Thickness Thermoelastic Deformations in Thick Composite and Sandwich Plates, A. Tessler, M.S. Annett and G. Gerndron
3. Design and Damage Tolerance of the Composite Inter-Stage Attach Fitting, An Hou and Kurt Gramoll
4. Conventional Data Assimilation Metods in Rotordynamics, H. C. Piccoli
5. Virtual Laboratory for SALD and SALDVI Solid Freeform Fabrication, Zbigniew M. Bzymek and David Ferreira

12:10 PM - 1:20 PM Lunch Break

Monday Afternoon: 1:20 PM - 3:10 PM
*(Unless Otherwise Noted)

RECENT DEVELOPMENTS IN ANISOTROPIC ELASTICITY

Organizers: T.C.T. Ting and D.M. Barnett
Session M3A. 1:20 PM - 3:10 PM
Room: Brush Mountain A, Squires
Co-Chairs: A.J.M. Spencer and F. Paris

1. Analytical Formulas of Free Terms in the Two-Dimensional Somigliana Stress Identity for Anisotropic Materials, V. Mantic and F. Paris.
2. Analytical Solutions for the Deformation of Rectangular Plates Subjected to Arbitrary Boundary Conditions, S. S. Vel and R. C. Batra.
3. A State Space Approach to Laminate Edge Problems, Y. M. Wang, J. Q. Tarn and C. K. Hsu.
4. Development of BEM Techniques for the Coupled Bending-Extension Problems for Thin Anisotropic Laminates with Corner Points, D. D. Zakharov and W. Becker.
5. Transfer and Propagator Matrix Methods for Monoclinic Elastic Plates and Shells, A. J. M. Spencer.

SHAPE MEMORY ALLOYS

Session M3B. 1:20 PM - 2:48 PM
Room: 341 Squires
Co-Chairs: X.J.R. Avula and E. Johnson

1. Constitutive Model Selection and Computational Solution Accuracy for Shape Memory Alloy Material, V. G. DeGiorgi and H. Saleem
2. Mean Strain Effects on the Fatigue Properties of a NiTi Shape-Memory Alloy, R.M. Tabanli, N.K. Simha and B.T. Berg
3. Monotonic and Cyclic Stress-Strain Response of Aged Single Crystal NiTi Shape Memory Alloys, Ken Gall, Huseyin Sehitoglu, Rob Anderson and Yuriy Chumlyakov
4. Martensitic Transformations in SMA Inclusions and Overall Response of a SMA-Reinforced Composite, Z. K. Lu and G. J. Weng

EXPERIMENTS IN FRACTURE MECHANICS
In Honor Of
Professor C. W. Smith

Organizer: A. Shukla
Session M3C. 1:20 PM - 3:10 PM
Room: Conf. Room E, DBH&CC
Co-Chairs: J.S. Epstein and A. Andonian

1. Dynamic Shear-Dominated Intersonic and Supersonic Crack Growth in Bimaterials and Layered Systems, Ares J. Rosakis and Omprakash Samudrala
2. World's Smallest Center Cracked Panel Fracture Test, W. N. Sharpe, Jr.
3. The Influence of Material Inhomogeneity on Isochromatics in a Graded Cracked Medium, M. Ozturk and F. Erdogan
4. Evaluation of Crack Tip Parameters in Functionally Graded Composites: An Optical and Numerical Investigation, C.E. Rousseau and H. V. Tippur
5. Nano-Crack Nucleation And Propagation Under In-Situ Transmission Electron Microscope, Scott X. Mao

RECENT DEVELOPMENTS IN THE STUDY OF IMPACTS ON COMPOSITE MATERIALS

Organizers: S. Abrate and G. Schoeppner
Session M3D. 1:20 PM - 3:10 PM
Room: Conf. Room C, DBH&CC
Co-Chairs: D. Liu and A. D. Kelkar

1. Mass Criterion for Wave Controlled Impact Response of Composite Plates, R. Olsson
2. Impact Dynamics and Damage in Composite Structures, A. S. Yigit and A. P. Christoforou
3. The Dynamic FE Analysis of Frictional Contact Using Variational Inequalities, A. Czekanski and S.A. Meguid
4. 3-D Variational Impact Contact Analysis of Layered Composite Bars, A. E. Bogdanovich and S. P. Yushanov
5. Mathematical Models for the Analysis of Impacts by Foreign Objects, S. Abrate

STRESSES AND FRACTURE IN ADHESIVE BONDS
In Honor Of
Professor Max Williams

Organizers: D.A. Dillard and K. Liechti
Session M3E. 1:20 PM - 3:10 PM
Room: Conf. Room A, DBH&CC
Co-Chairs: R.H. Plaut and P. Qiao

1. Rigid Square Inclusion Embedded Within an Epoxy Disk: Asymptotic Stress Analysis, E. D. Reedy, Jr. and T. R. Guess
2. Cohesive Zone Modeling of Crack Nucleation at Bimaterial Corners, I. Mohammed and K. M. Liechti
3. The Effect of Surface Treatments in Aluminum/Epoxy Bonds on Interfacial Fatigue Crack Initiation, B. K. Ahn, J. Kim, D. A. Dillard, J. G. Dillard and D. L. Lefebvre
4. Development of Bondline Failure Envelopes, G. L. Anderson, R. A. Crook, D. E. Richardson and R. E. Boothe
5. Effect of Work of Adhesion on Contact of a Bent Elastica with a Flat Surface, A. J. Dalrymple, R. H. Plaut, D. A. Dillard and J. Qi

GRADIENT PLASTICITY AND ITS APPLICATIONS

Organizers: T. Hasebe, H.M. Zbib, H. Gao
Session M3F. 1:20 PM - 3:10 PM
Room: Rear Auditorium, DBH&CC
Co-Chairs: J.Y. Shu and S. Zhou

1. A Review of Gradient Elasticity and Plasticity Models with Recent Applications, E. C. Aifantis
2. Micro to Macro Plasticity: Discrete Dislocations and Continuum Modeling, H. M. Zbib
3. Jogged Screw Dislocations in g-TiAl Alloys, K. Chen and S. J. Zhou
4. On Plasticity of Single Crystals and the Boundary Value Problem of Dislocation Dynamics, A. A. El-Azab
5. Micropolarity in Two-Dmensional Honeycombs, W. E. Warren and E. Byskov

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NONLINEAR VIBRATIONS
AND PERTURBATION METHODS
In honor of
Professor Ali Nayfeh

Organizer: D. Mook
Session M3G. 1:20 PM - 3:10 PM
Room: Front Auditorium, DBH&CC
Co-Chairs: R. Ibrahim and A. Bajaj

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1. Dynamics of a Furling Wind Turbine, M. Bikdash, D. Chen and M. Harb
2. A Modified Zabolotskaya-Khokhlov Equation for Systems Having Cubic or Near-Cubic Nonlinearity, M. S. Cramer and M. Andrews
3. Curve Veering Revisited, A. W. Leissa
4. Coupling Between Neighboring Two-Dimensional Modes of Water Waves, Z. Feng
5. A Direct Integration Method for Linear and Non-Linear Structural Dynamics, B. Tchamwa and T. Conway

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ADVANCES IN THE CONTINUUM
MECHANICS AND THERMODYNAMICS
OF MATERIAL BEHAVIOR
In Honor Of
Professor Roger Fosdick

Organizer: Y.-C. Chen
Session M3H. 1:20 PM - 3:32 PM
Room: Brush Mountain B, Squires
Co-Chairs: J.J. Carey and S.S. Antman

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1. A Problem in the Molecular Biology of DNA: The Attainment of Exact and Explicit Expressions for Supercoiled Configurations of Elastic Rings and Methods for Determining Their Stability, Bernard D. Coleman, David Swigon and Irwin Tobias
2. Geometric Effects in an Elastic Tensegrity Structure, I. J. Oppenheim and W. O. Williams
3. Multiscale Reconstruction of Grain Boundary Energy from Microstructure, Darren E. Mason
4. A Note on the Uniaxial Tension of Elastic Bodies with Non-Convex Energy, D. De Tommasi, P. Foti, S. Marzano, M.D. Piccioni and G. Puglisi
5. Two Micromechanical Models in Acoustoelasticity: a Comparative Study, Roberto Paroni and Chi-Sing Man
6. On the Torsion of an Incompressible Cylinder with Non-convex Energy, G. Del Piero and R. Rizzoni

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COMPOSITES

Session M3I. 1:20 PM - 3:10 PM
Room: Conference Room F, DBH&CC
Co-Chairs: Y. Daenis and T.G. Stoumbos

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1. On the Growth and Decay of Acceleration Waves in Random Media, M. Ostoja-Starzewski and J. Trebicki
2. Analysis of Local Material Property Fields for Random Composites, S. C. Baxter and L. L. Graham
3. Health Monitoring Technologies for Alumina-Fiber-Reinforced Plastics, Hiroshi Aoyama and Hiroyuki Watanabe
4. Buckling of Rectangular Plates Containing Multiple Eccentric Delaminations Under Uniaxial Compressive Loading, Keshav Kumar and Dongwei Shu

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MODERN TRENDS IN
THE FOUNDATION OF THE THEORY
OF SHELLS AND PLATES AND THEIR BEHAVIOR

Organizer: M. Di Sciuva
Session M3J. 1:20 PM-3:10 PM
Room: 345 Squires
Co-Chairs: L. Librescu and M. Di Sciuva

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1. A New Element for Treating Large Deformation in Thick Shell Structures, N. El-Abbasi and S.A. Meguid
2. Holographic Interferometry Assessment of Stress Distribution in Sandwich Beams in Bending. Preliminary Results, M. Di Sciuva, U. Icardi, E. Miraldi and G. Ruvinetti
3. Numerical Assessment of the Core Deformability Effect on the Behavior of Sandwich Beams in Bending, M. Di Sciuva and U. Icardi
4. Displacement and Strain Statistics of thermally buckled Plates, Jon Lee
5. Vibration Control of Shear Deformable Laminated Plates-Modelling Implications, Min-Yung Chang and Liviu Librescu

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VISCOPLASTICITY THEORIES
In Honor Of
Professor Piotr Perzyna

Organizer: T. Lodygowski
Session M3K. 1:20 PM - 3:10 PM
Room: 234 Squires
Co-Chairs: G.J. Voyiadjis and R. Garrett

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1. The Overstress Model Revisited, E. Krempl
2. Travelling versus Standing Waves in Problems of Viscoplastic Solids, A. Glema, T. Lodygowski and P. Perzyna

3. A Cohesive Zone Model for Crack Growth in Creep Resistant Alloys, T. J. Delph
4. An Elasto-Viscoplastic Constitutive Model with Strain Softening for Soft Rock, T. Adachi, F. Oka and M. Koike
5. Technique for Solving Problems of Developed Deformation and Fracture of Metals. Examples, V. L. Kolmogorov

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MATERIALS PROCESSING

Organizers: H.P. Cherukuri, R.E. Johnson and R.E. Smelser
Session M3L. 1:20 PM - 3:10 PM
Room: 219 Squires
Co-Chairs: H. Cherukuri and P. Michaleris

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1. Residual Stresses Measured Before and After Stress Relief in Rolled Aluminum Plate, Michael B. Prime, Loren A. Jacobson and Manuel A. Pacheco
2. Grain Size Effects in Viscoplastic Polycrystals at Moderate Strains, Amit Acharya and A. J. Beaudoin
3. Simulation of Metal Working Operations Using Arbitrary Lagrangian-Eulerian Finite Element Method with Strain Rate and thermal Effects, M. Movahhedy, M. S. Gadala and Y. Altintas
4. Predicting of the Machined Surface Geometry and the Cutting Forces in the End Milling with a Thermoviscoplastic Approach, A. Moufki, D. Dudzinski and A. Molinari
5. Simulation of Precipitate Evolution in Continuous Quench of Aluminum Alloy Extrusions, J. Huang, N. Sobh, L. Yin, R. B. Haber, D. A. Tortorelli and R. Hyland

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INSTABILITY IN SOLIDS
AND STRUCTURES
Sponsored by ASME/AMD Technical Committee
on Instabilitiy in Solids and Structures

Organizers: S. Kyriakides and N. Triantafyllidis
Session M3M. 1:20 PM - 3:10 PM
Room 236 Squires
Co-Chairs: S. Kyriakides and S. R. Reid

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1. Dynamic Crushing of Wood and other Cellular Materials, S.R. Reid, J.J. Harrigan and T.Y. Reddy
2. The Role of Defect Interactions in Deterioration of Strength and Stiffness of Closed Cell Metallic Foams, A.-F. Bastawros and A. G. Evans
3. Stability of Thermally Loaded NiTi Pure Crystals, J. A. Shaw and N. Triantafyllidis
4. Failure of Composites Under Axial Compression and Shear, T. J. Vogler, S.-Y. Hsu and S. Kyriakides
5. Instabilities and Scale Effects in Composites, Sylvain Drapier, L. Léotoing and A. Vautrin

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ON EXPERIMENTAL INVESTIGATION OF
THE BEHAVIOR OF MATERIALS
AT HIGH STRAIN RATES
"KOLSKY BAR FIFTY YEARS LATER"
In Memory of
the late Professor H. Kolsky

Organizers: R.J. Clifton and J.R. Klepaczko
Session M3N. 1:20 PM - 3:10 PM
Room: Executive Room, DBH&CC
Co-Chairs: K.T.Ramesh and S.Tanimura

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1. High-Temperature High-Strain-Rate Recovery Techniques based on Kolsky's Split Hopkinson Invention, Sia Nemat-Nasser.
2. Developments of the SHPB Technique for Low Resistance Materials, H.Zhao and G.Gary
3. Determination of the Mechanical Properties of the Materials by Using Short and Long Specimens in a Hopkinson Pressure Experiment, S.Tanimura, I.Suliciu and K.Mimura
4. Split-Hopkinson Bar for Tension, Compression, Torsion, Bending and More, K. Ogawa
5. Dynamic Shearing of Sheet Metals Using Kolsky Bar, W. K. Nowacki

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3:10 PM - 3:40 PM Refreshment Break
Old Dominion Ballroom, Squires

Monday Afternoon: 3:40 PM - 5:30 PM

*(Unless Otherwise Noted)

RECENT DEVELOPMENTS
IN ANISOTROPIC ELASTICITY

Organizers: T.C.T. Ting and D.M. Barnett
Session M4A. *3:40 PM - 5:52 PM
Room: Brush Mountain A, Squires
Co-Chairs: S.C. Cowin and G. Nakamura

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1. Universal Connections of Elastic Fibrous Composites: Some New Results, Tungyang Chen and Quan-Shui Zheng.
2. Can the Iosipescu Specimen be used to Measure the Shear Properties of Anisotropic Materials? C. Liu, Y. Huang and M. G. Stout.
3. Surface Impedance Tensor in Linear Elasticity with Residue Stress, Gen Nakamura and Kazumi Tanuma.
4. A Multidimensional Anisotropic Strength Criterion Based on Kelvin Modes, Y. P. Arramon, M. M. Mehrabadi, D. W. Martin and S. C. Cowin.
5. An Invariance Method for the Analysis of Inhomogeneous and Anisotropic Elastic Constant Data, S. C. Cowin and G. Yang.

6. On the Application of Covariance In Anisotropic Finite Elasticity, Panayiotis Papadopoulos and Jia Lu

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MECHANICS OF ELECTROMAGNETIC MATERIALS AND STRUCTURES

Organizers: G.A. Maugin, J.S. Lee and J.S. Yang
Session M4B. 3:40 PM - 5:30 PM
Room: 341 Squires
Co-Chairs: G.A. Maugin and H. Y. Yu

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1. Finite Deformations of Materials Subjected to Electromagnetic Fields and Mechanical Forces, S. R. Bilyk, K. T. Ramesh and T. W. Wright
2. LPEE Growth of Ternary GaInAs Single Crystals under Magnetic Field, S. Dost and H. Sheibani
3. Hybrid Mixture Theory for Charged Swelling Particulate Materials, L. S. Bennethum and J. H. Cushman
4. Viscoelastic Properties of PVDF, A. Vinogradov and A. Childs
5. Crack Branch Problems in Piezoelectric Materials, Qing-Hua Qin and Yiu-Wing Mai

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EXPERIMENTS IN FRACTURE MECHANICS
In Honor Of
Professor C. W. Smith

Organizer: A. Shukla
Session M4C. *3:40 PM - 5:52 PM
Room: Conf. Room E, DBH&CC
Co-Chairs: W.N. Sharpe, Jr. and L. Nikitin

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1. Energy Partitioning of a Shear and Compression Loaded Center Crack, Eric D. Steffler and Jonathan S. Epstein
2. Effect of Sample Geometry on Mechanical Characteristics of Cord-Rubber Composites, Archie A. T. Andonian
3. Oscillatory Cracks in Thermally Quenched Glass Plates, B. Yang and K. Ravi-Chandar
4. The Problem of Crack Intersecting a Free Surface, I. S. Raju and K. N. Shivakumar
5. Fatigue Fracture During Wear Testing of Rubber, Ing. Gianni Nicoletto and V. Peveri
6. Application of Acousto-Ultrasonic Technique in Evaluation of Bond Strength of Composite Patch, Shiguo Rao and Isaac M. Daniel

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RECENT DEVELOPMENTS IN
THE STUDY OF IMPACTS
ON COMPOSITE MATERIALS

Organizers: S. Abrate and G. Schoeppner
Session M4D. *3:40 PM - 5:30 PM
Room: Conf. Room C, DBH&CC
Co-Chairs: S. Abrate and J. Nemes

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1. Finite Element Analysis of Failure Modes in Z-pin Sandwich panels and Comparison to Experiments, L. N. B. Gummadi, A. N. Palazotto
2. Perforation of Sandwich Plates by Projectiles at Normal Incidence, M. S. Hoo Fatt and K. S. Park.
3. Impact Damage Resistance of Innovative Functional Sandwich Composites, U. K. Vaidya, M.V. Hosur , P. Kumar, H. Mahfuz , A. Haque and S. Jeelani
4. A New Constitutive Model for the Simulation of Impact Damage Progression in Laminated Composite Plates, Kevin V. Williams, Reza Vaziri and Anoush Poursartip
5. Hypervelocity Impact Damage to Composites, R. C. Tennyson and C. Lamontagne

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STRESSES AND FRACTURE
IN ADHESIVE BONDS
In Honor Of
Professor Max Williams

Organizers: D.A. Dillard and K. Liechti
Session M4E. *3:40 PM - 6:14 PM
Room: Conf. Room A, DBH&CC
Co-Chairs: K. Liechti and J. Davalos

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1. Nonlinear, Viscoelastic Behavior of PMMA in Multiaxial Stress States, W. G. Knauss
2. On the Spallation of Graded Coatings, F. Erdogan and T.-C. Chiu
3. Cracks Faster than the Shear Wave Speed, A. J. Rosakis, O. Samudrala and D. Coker
4. Williams meets Von Karman Mode Coupling and Non-Linearity in the Fracture of Thin Plates, T. Zehnder, C.-Y. Hui and Y. Potdar
5. Fracture of Adhesive Joints at Elevated Temperatures, D. R. Veazie, J. Lindsay and J. Qu
6. Three-Dimensional Fracture Analysis of Interface Cracks Using Enriched Finite Elements, A. O. Ayhan and H. F. Nied
7. Three-Dimensional Thermal Crack Growth in Self-Stressed Bimaterial Joints: Analysis and Experiment, K. P. Herrmann and K. Linnenbrock

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NONSMOOTH/NONCONVEX MECHANICS
In Honor of
Professor P. D. Panagiotopoulos

Organizers: D.Y. Gao, R.W. Ogden, G.E. Stavroulakis
Session M4F. 3:40 PM - 5:30 PM
Room: Rear Auditorium, DBH&CC
Co-Chairs: W.W. Hager and R. Polyak

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1. On Optimal Design in Mixed Convection, Jeff Borggaard
2. Reduction of Second Order Unilateral Singular Systems with Applications in Mechanics, Y. Dumont, D. Goeleven and M. Rochdi

3. Inverse and Identification Problems in Nonsmooth Mechanics, Georgios E. Stavroulakis
4. Optimization with a Class of Non-Smooth and Non-Convex Functions, V. Vetrivel and J. Dutta
5. The Dynamic and Chaotic Behavior of a Physically Nonlinear Beam, Yao-Huan Xu

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NONLINEAR VIBRATIONS
AND PERTURBATION METHODS
In Honor Of
Professor Ali Nayfeh

Organizer: D. Mook
Session M4G. *3:40 PM - 6:14 PM
Room: Front Auditorium, DBH&CC
Co-Chairs: S.C. Sinha and F. Pfeiffer

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1. Rotorcraft Aeromechanics: Nonlinear Phenomena, I. Chopra
2. State of the Art of Passive and Active Flow and Structures Controls, O. A. Kandil
3. A Time-Domain Simulation for Evaluating Smart Wing Concepts for Reducing Gust Loads, B. Hall, S. Preidikman and D. Mook
4. An Equivalence Result in Sensitivity Analyses for Euler Flows, A. Limache and E. M. Cliff
5. Passive Transient Wave Confinement due to Nonlinear Joints in Coupled Flexible Systems, T. A. Nayfeh and A. F. Vakakis
6. Prediction of the Dynamic Behavior of an Elastically Supported Plate Subjected to a Steady Uniform Airflow, K. A. Al-Saif and M. I. Al-Majed
7. Wing Rock with External Excitation, K. R. Asfar and D. S. Al-Ani

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GRANULAR MECHANICS AND MATERIALS

Organizer: O. Vinogradov
Session M4H. 3:40 PM - 5:30 PM
Room: Brush Mountain B, Squires
Co-Chairs: O. Vinogradov and G. Xu

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1. On Shock Waves in Porous and Granular Materials, K. Wilmanski
2. On a Continuum Model of Adsorption in Porous Materials, B. Albers
3. On the Analogy between Thermoelasticity and Poroelasticity, R. W. Zimmerman
4. Anisotropic Models for Granular and Dense Two-Phase Flows, G. Ahmadi and J. Cao

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RECENT ADVANCES
IN EXPERIMENTAL MECHANICS
In Honor Of
Professor Daniel Post

Organizers: B. Han and P. Ifju
Session M4I. *3:40 PM - 5:52 PM
Room: Conf. Room F, DBH&CC
Co-Chairs: B. Han and A. Kato

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1. The Contributions of Dr. Daniel Post to the Technical Foundation of Vishay Intertechnology, Inc. and to my Own Career, Felix Zandman
2. Development of an Experimental Method for Intrinsic Stress Measurement in Semiconductor Bumping Process, Yifan Guo, Dianne Mitchell and Vijay Sarihan
3. Real-time Phase Distribution Analysis of Fringe Patterns using Integrated Phase Shifting Method, Yoshiharu Morimoto and Motoharu Fujigaki
4. The Interrogation of the Fringes of Photomechanics, James McKelvie
5. Characterizing Crack Growth in Thin Al Panels Under Tension-Torsion Loadings with Three-Dimensional Digital Image Correlation, Jeffrey D. Helm, Michael A. Sutton and Stephen R. McNeill
6. Experimental Determination of Crack-Bridging in Cementitious Composites, R. T. Palsson and R. E. Rowlands

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NEW ADVANCES IN THE MODELING OF COMPOSITE
MATERIAL STRUCTURES AND THEIR BEHAVIOR

Organizer: L. Librescu
Session M4J. 3:40 PM - 5:08 PM
Room: 345 Squires
Co-Chairs: Y.W. Kwon and N. Rizzi

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1. Modeling and Simulation of Progressive Damage and Failure in Composite Structures, Young W. Kwon and Jimmy C.-T. Liu
2. Lagrangean Systems as Microstructured Continua, Gianmarco de Felice, Ginevra Salerno and Nicola Rizzi
3. A Novel Concept of Three-Dimensional Analysis of Composite Structures Using 1-D, 2-D and 3-D Bernstein Polynomial Approximations, Alexander E. Bogdanovitch
4. Application of Statical Linearization Techniques in Design of Quasi-Optimal Active Control of Nonlinear Systems, Leslaw Socha

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VISCOPLASTICITY THEORIES
In Honor Of
Professor Piotr Perzyna

Organizer: T. Lodygowski
Session M4K. *3:40 PM - 6:14 PM
Room: 234 Squires
Co-Chairs: T. L. Warren and E.J. Rapacki, Jr.

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1. Determination of the Viscoplastic Behavior of Materials in Tension, Y. Li and K. T. Ramesh
2. Dislocation-Based Modeling of Dynamic Plasticity for BCC Metals: Iron and Tantalum, J.R.Klepaczko

3. An Isothermal Coupled Viscoplastic/Damage Model for Composites at Elevated Temperatures, G. Z. Voyiadjis and B. Deliktas
4. Analysis of the Influence of Various Effects on Cycle Fatigue Damage in Dynamic Processes, W. Dornowski and P. Perzyna
5. A Non-equilibrium Thermodynamic Geometric Structure for Thermoviscoplasticity, H. W. Haslach
6. The Deteriorating Effect of Plane-Strain Condition on Ductile Damage, Guo-Chen Li and Xian-Wu Ling
7. Gradient Effects in Viscoplasticity, Elias C. Aifantis

MATERIALS PROCESSING

Organizers: H.P. Cherukuri, R.E. Johnson and R.E. Smelser
Session M4L. *3:40 PM - 6:14 PM
Room: 219 Squires
Co-Chairs: R.E. Johnson

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1. Process Simulation of Ausforming Austempered Ductile Iron Components, X. Y. Lei, G. V. DelBrugge, D. B. Weiss and C. J. Lissenden
2. The Effects of Fluid on the Deformation and the Ductile/Brittle Transition of Silicon, John A. Patten and Sherman V. Mumford
3. An Analytical Model of Roll Casting, R. E. Smelser, T. Anderson and K. T. Kubo
4. Vertical Continuous Casting of Bars: An Asymptotic Formulation Including Temperature-Dependent material Properties, Harish P. Cherukuri and R. E. Johnson
5. The Simulation of the Spring-Back of Tube Bending, W. J. Li and J. Lieh
6. Springback Prediction of Metal Sheets after Equal or Unequal Double-Curvature Forming, P. Xue, T.X. Yu, E. Chu
7. Investigations on the Influence of Grinding Parameters on the Micro Strain of Medium Carbon Steel, K. Hari Prasad Reddy, B. Ramamoorthy, P. Kesavan Nair

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INSTABILITY IN SOLIDS AND STRUCTURES
Sponsored by ASME/AMD Technical Committee on Instabilitiy in Solids and Structures

Organizers: S. Kyriakides and N. Triantafyllidis
Session M4M. 3:40 - 5:30 PM
Room: 236 Squires
Co-Chairs: E. Byskov and E. Corona

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1. Isotropic Constitutive Models for Metallic Foams, V. S. Deshpande and N. A. Fleck
2. Stability of Cyclically Loaded Structures - An Illustrative Example, Y. Sun & N. Triantafyllidis
3. Buckling of Cracked Plates Under Biaxial Loading, Edmundo Corona
4. An Enhanced Asymptotic Analysis of Imperfection Sensitivity of the Shanley-Hutchinson Column, Claus Dencker Christensen and Esben Byskov
5. Stability Issues in Cyclic Plastic Deformations, Ralf Peek

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ON EXPERIMENTAL INVESTIGATION OF THE BEHAVIOR OF MATERIALS AT HIGH STRAIN RATES
"KOLSKY BAR FIFTY YEARS LATER"
In Memory of the late Professor H. Kolsky

Organizers: R.J. Clifton and J.R. Klepaczko
Session M4N. 3:40 pm - 5:52 PM
Room: Executive Room, DBH&CC
Co-Chairs: R. Garrett and D. L. Littlefield

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1. Elastic Wave Dispersion in Textured, Split-Hopkinson Pressure Bars, T. A. Mason, G. C. Kaschner and G. T. Gray, III
2. Use of a Modified Torsional Kolsky Bar for Investigating Dynamic Friction, S. Rajagopalan and V. Prakash.
3. Impact Tensile and Shear Properties of Adhesive Joints, Tokashi Yokoyama
4. Experimental Investigation into Energy Absorption and Fragmentation Degree Under Different Impulsive Loads, Xibing Li, Desheng Gu and Deshun Liu
5. The Use of Finite Element Analysis and Stress Equilibrium Issues in Testing Polymeric Composites with the Split Hopkinson Pressure Bar, D. M. Goto, R. K. Garrett, Jr., V. Yoshi and G. T. Gray III
6. Thermo-Plastic Shear Localization in Ti-Alloy Induced During Dynamic Loading, Y.B. Xu, J.H. Zhang, J.Q. Yu L.T. Shen and Y.L. Bai

Tuesday June 29, 1999

Registration
7:30 AM - 5:00 PM
Old Dominion Ballroom, Squires

Tuesday Morning: 8:00 AM - 9:50 AM
*(Session T1G begins at 7:16 AM)

RECENT DEVELOPMENTS IN ANISOTROPIC ELASTICITY

Organizers: T.C.T. Ting and D.M. Barnett
Session T1A. 8:00 AM - 9:50 AM
Room: Brush Mountain A, Squires
Co-Chairs: Y. Huang and J.R. Berger.

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1. Waves in Wood: Elastodynamics of Cylindrically Orthotropic Materials, P. A. Martin and J. R. Berger.
2. Transient Elastic Wave Propagation and Dynamic Stress Concentration in Woven Fabric Composites, T. W. Chou and Baoxing Chen.
3. Analysis of Intersonic Crack Growth in Unidirectional Fiber-Reinforced Composites, Y. Huang, W. Wang, C. Liu and A. J. Rosakis.
4. On Radiation-Free Transonic Motion of Cracks and Dislocations in Anisotropic Elastic Solids, H. Gao, Y. Huang, P. Gumbsch and A. J. Rosakis.
5. Intersonic Crack on Interface, H. H. Yu and Z. Suo.

MECHANICS OF CONFIGURATIONAL FORCES IN MATERIALS

Organizers: C.H. Wu, G.G.A. Maugin and A. Chudnovsky
Session T1B. 8:00 AM - 9:50 AM
Room: 341 Squires
Co-Chairs: J. Jaric and A. Masud

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1. Toughening of Zirconia-Ceramics by Phase Boundary Propagation, N. K. Simha
2. On the Role of Configurational Surface Stress in the Evolution of Interfaces, A. Danescu and F. Sidoroff
3. Multiplicative Finite Strain Framework and the Notion of Intermediate Configuration for the Modeling of Shape Memory Alloys, Arif Masud
4. Phenomenological Modeling of Polymer Crystallization using the Notion of Multiple Natural Configurations, K. R. Rajagopal and I. J. Rao
5. Electrochemical Mechanics: Basic Equations and Anodic Bonding, Jim Boyd and Eniko T. Enikov

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EXPERIMENTS IN FRACTURE MECHANICS
In Honor Of
Professor C. W. Smith

Organizer: A. Shukla
Session T1C. 8:00 AM - 9:50 AM
Room: Conf. Room E, DBH&CC
Co-Chairs: E. Sommer and F.-P. Chiang

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1. Distortion in GMAW of Thin Plates: Temperature and Deformation Measurements using High-Speed Thermal Imaging and Stereoscopic Video Imaging, H. A. Bruck, H.W.. Schreier, M. A. Sutton, Y. J. Chao and M. Davoud
2. Thickness Effects in Notched Graphite-Epoxy Lamina, Carl T. Herakovich and Christopher G. Seitz
3. Fatigue and Fracture Simulations Using the Finite Element Method, Jim Newman, Jr.
4. Plastic Flow and Deformation Characteristics near the Fracture-Process Zone of Ductile Fracture in Metals, A.-F. Bastawros and K.-S. Kim
5. Automated Photoelastic Determination of the Crack Tip K-Dominated Field, M. J. Ekman and Andrew D. Nurse

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RECENT DEVELOPMENTS IN THE STUDY OF IMPACTS ON COMPOSITE MATERIALS

Organizers: S. Abrate and G. Schoeppner
Session T1D. 8:00 AM - 9:50 AM
Room: Conf. Room C, DBH&CC
Co-Chairs: I. Beyerlein and N. Rupert

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1. Characterization of Impact Damage in Composites using Laser-Based Ultrasound, J.-H. Shih, A.K. Mal and A.D.W. McKie
2. Experimental Studies on Damage and Residual Compressive Strength of T300/914 CFRP Laminates under Low-Velocity Impact, M. V. Hosur, C. R. L. Murthy and T. S. Ramamurthy
3. Damage Tolerance Design of Graphite/Epoxy Composite Laminates Based on Indentation and Impact Energy, Christopher Grace and Ajit D. Kelkar
4. Effect of Rate-Dependence on Prediction of Impact Damage in Laminated Composites, J.A. Nemes

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DURABILITY OF MATERIALS
In Honor Of
Professor Kenneth L. Reifsnider

Organizer: C. Bakis
Session T1E. 8:00 AM - 9:50 AM
Room: Conf. Room A, DBH&CC
Co-Chairs: A. Chattopadhya and C. Brinson

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1. A Damage Mechanics Based Methodology For Life Prediction Of Composite Structures, Ramesh Talreja
2. Methodology to Predict the Residual Strength of Polymer Matrix Composites in Applications such as Aircraft Primary Structure, Charles E. Harris and Timothy W. Coats
3. A Methodology to Characterize the Durability of Polymer Matrix Fibrous Composites, Roger J. Morgan and E. Eugene Shin
4. Fatigue of Rubbers Under Complex Loading and Complex Stress State, Karine Le Gorju and Claude Bathias
5. Some New Results for the Transverse Cracking Problem in Cross-ply Laminates, N. J. Pagano and G. A. Schoeppner

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NONSMOOTH/NONCONVEX MECHANICS
In Honor of
Professor P. D. Panagiotopoulos

Organizers: D.Y. Gao, R.W. Ogden, G.E. Stavroulakis
Session T1F. 8:00 AM - 9:50 AM
Room: Rear Auditorium, DBH&CC
Co-Chairs: F. Pfeiffer and P. Padalos

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1. Dual Extremum Principles in Nonlinear Elastic Membrane Theory, R.W. Ogden and J.B. Haddow

2. Stability of an Elastic-Plastic or Visco-Elastic Evolution, Quoc Son Nguyen
3. Non-smooth Solutions in Plasticity, Wei H. Yang
4. Analytic Solutions for 3-D Nonconvex-Nonsmooth Finite Deformation Elastoplasticity with Applications, David Yang Gao
5. On Some Pseudo-Elastic Solutions in the Spinoidal Region for the one Dimensional Martensitic Phase Transitions, K.A.Lazopoulos

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NONLINEAR VIBRATIONS
AND PERTURBATION METHODS
In Honor Of
Professor Ali Nayfeh

Organizer: D. Mook
Session T1G. * 7:16 AM - 9:50 AM
Room: Front Auditorium, DBH&CC
Co-Chairs: T. Sugiura and G. Rega

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1. Resonant Nonlinear Dynamics of Weakly Coupled Oscillators, C. Folley and A. K. Bajaj
2. Dynamic Stability and Performance of Systems of General-Path Pendulum Vibration Absorbers, S. W. Shaw and A. Alsuwaiyan
3. Transition from Planar to Whirling Motions in a Certain Nonlinear System, M. Dimentberg and D. Iourtchenko
4. PZT-based Vibration Control of Plate, Y. Shen and A. Homaifar
5. Large Stabilization of the Parametric Resonance of a Cantilever Beam by Bifurcation Control with a Piezo Actuator, S. Saigusa, H. Yabuno and N. Aoshima
6. Nonlinear Oscillations of a Plate with Piezoceramic Patches, B. Balachandran
7. Control of Wave Propagation in Shape Memory Composites, A. Baz

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GRANULAR MECHANICS AND MATERIALS

Organizer: O. Vinogradov
Session T1H. 8:00 AM - 9:50 AM
Room: Brush Mountain B, Squires
Co-Chairs: G. Ahmadi and M.K.W. Wong

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1. On Spring-Network Model and Effective Elastic Moduli of Granular Materials, K. Alzebdeh and M. Ostoja-Starzewski
2. Micromechanical Properties of the Assembly of Two Types of Random Disks, O. Vinogradov
3. An Experimental Study of Granular Flow in a Couette Flow Device, G. Ahmadi, K.E. Elliot and W. Kvasnak
4. Collision Detection Algorithms in Simulation of Granular Materials, M. Gavrilova, J. Rokne, O. Vinogradov and D. Gavrilov
5. On Overall Thermal Conductivity of Porous Carbon Foam, C. C. Tee, J. W. Klett, N. Yu and D. P. Stinton

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RECENT ADVANCES
IN EXPERIMENTAL MECHANICS
In Honor Of
Professor Daniel Post

Organizers: B. Han and P. Ifju
Session T1I. 8:00 AM - 9:50 AM
Room: Conf. Room F, DBH&CC
Co-Chairs: P. Ifju and M. Shimbo

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1. Diffraction Technique for Direct Determination of Strains using High Sensitivity Moire Grating, Y.Y. Hung, Y.W. Qin and H.M. Shang
2. Microstructural Crack Tip Fields in Fatigued CT Stainless Steel Specimens, F.A. La Porta, J.M. Huntley and T.E. Chung
3. Stress Intensity Factors for Bi-Material Interface Using Photomechanics, D. Goldar, Vinit K. Kain and Chandra Kishen.
4. Studies of Interferometry on Composite Structures, Dahsin Liu and Elias Shakour
5. Modal Suppression in Three-Dimensional Structures Using Piezoactuators, Doraiswami Ravi and K.M. Liew

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NEW ADVANCES IN SMART MATERIAL
STRUCTURES CONTROL AND DAMAGE DETECTION

Organizer: L. Librescu and M. Di Sciuva
Session T1J. 8:00 AM-9:50 AM
Room: 345 Squires
Co-Chairs: L. Lecce and O. Song

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1. Contribution to the Numerical Modelization of Piezoelectric Thin Shells, Michel Bernadou and Christophe Haenel
2. Lessons Learned from FEM Simulation of the Vibro-Acoustical Response of Complex Structures Actuated by Piezoceramic Patches, L. Lecce, M. Viscardi, A. Concilio and L. DeVivo
3. Electroelastic Shell/Plate Equations for High Frequency Vibrations of Thermopiezoelectric Materials, G. Askar Altay and M. Cengiz Dökmeci
4. Enhancement of Buckling Loads of Piezoelectric Smart Structures, Bo-Hua Sun
5. Control of a Hysteretic Actuator Using Inverse Compensation, William S. Galinaitis and Robert C. Rogers

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SHEAR BANDING AND DYNAMIC FAILURE
In Honor Of
Dr. T. W. Wright

Organizers: G. Ravichandran and A.M. Rajendran
Session T1K. 8:00 AM - 9:50 AM
Room: 234 Squires
Co-Chairs: A.M. Rajendran and J.J. Wu

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1. Introductory Remarks about Dr. Wright, A.M. Dietrich
2. Strain Localization in Frictional Granules, S. Nemat-Nasser
3. Localized Deformation Observed in Fracture of Brittle Rods, S. Bless, J. Cazamias and H. Simha
4. High-Strain-Rate Shear Bands in Inert and Reactant Granular Materials, V. F. Nesterneko and M. A. Meyers
5. Strain Induced Chemical Reactions in Shear Bands: Experiments and Modeling, V. I. Levitas, V. F. Nesterenko and M. A. Meyers
6. Modeling Damage Evolution in Ceramic Materials under Shock and High Strain Rate Loading Conditions, A. M. Rajendran

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VIBRATIONS AND DYNAMICS

Session T1L. 8:00 AM - 9:28 AM
Room: 219, Squires
Co-Chairs: T.G. Stoumbos and E. Austin

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1. Membrane Vibrations: A Review and New Experimental Results, Christopher H. Jenkins
2. Solutions to the Natural Frequencies of Fiber-Reinforced Plates, Wu Xiuli and Jean-Pierre Bardet
3. An Experimental Test of the Theoretical Equation for the Small Oscillation Frequency of the Mathematical Pendulum, M. Cabaravdic and S. Ekinovic
4. The Motion of a Flyline, Jon A. Hoffmann

INSTABILITY IN SOLIDS AND STRUCTURES
Sponsored by ASME/AMD Technical Committee on Instabilitiy in Solids and Structures

Organizers: S. Kyriakides and N. Triantafyllidis
Session T1M. 8:00 AM - 9:50 AM
Room 236 Squires
Co-Chairs: Y. Leroy and N. Triantafyllidis

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1. Instabilities within Grain Boundaries Penetrated by Fluid, Y.M. Leroy and J. Ghoussoub
2. Porosity Reduction by the Action of Pressure Solution, J. Raphanel, F.K. Lehner and Y. Leroy
3. Instability of Densification during Sintering, A. Molinari and E. Olevsky
4. Instabilities in Compacting Geomaterials, J. Rudniki and K. Issen
5. On Discrete Element Modeling of Powder Compaction, Pia Redanz and Norman A. Fleck

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CONSTITUTIVE RESPONSE OF NON-TRADITIONAL MATERIALS

Organizer: S. Ghatuparthi
Session T1N. 8:00 AM - 9:50 AM
Room: Conference Room G, DBH&CC
Co-Chairs: A.M. Sastry

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1. Experimental Investigation of Damage in EB-PVD Thermal Barrier Coatings during Thermocyclic Loading, J. Lan and M.E. Walter
2. On Degradation of Porous Materials in High Energy-Density Battery Systems, Ann Marie Sastry
3. Experimental and Numerical Analysis of the Fracture of Functionally Graded Materials, A. Naranaswamy, M. H. Santare and J. Lambros
4. Static and Dynamic Failure Characteristics of Braided Composites, A. Sulibhavi, G. Subhash, and M. Zikry
5. Simulation of Sub-Sonic and Intersonic Crack Propagation in Fiber Composites, H.D. Espinosa and S. Dwivedi

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9:40 AM - 10:20 AM Refreshment Break
Old Dominion Ballroom, Squires

Tuesday Morning: 10:00 AM - 12:10 PM
*(Unless Otherwise Noted)

RECENT DEVELOPMENTS IN ANISOTROPIC ELASTICITY

Organizers: T.C.T. Ting and D.M. Barnett
Session T2A. 10:20 AM - 12:10 PM
Room: Brush Mountain A, Squires
Co-Chairs: C.O. Horgan and T.C.T. Ting

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1. The Remarkable Nature of Radially Symmetric Deformation of Spherically Uniform Linear Anisotropic Elastic Solids, T. C. T. Ting
2. Two-Dimensional Elasticity of Defects in a Semi-Infinite Orthotropic Medium with Free or Fully Constrained Surfaces, H. Y. Yu.
3. An Infinite Strip Problem of General Anisotropic Thermoelasticity, M. Y. Chung and Chao-Hsun Chen.
4. Anisotropy Induced Singularities in Linear Elasticity, C. O. Horgan.
5. Anisotropic Plasticity and Path-Dependent Failure Criteria for Sheet Metal Forming Applications, J. Pan, K. C. Liao, H. M. Huang, P. A. Friedman and S. C. Tang.

MECHANICS OF CONFIGURATIONAL FORCES IN MATERIALS

Organizers: C.H. Wu, G.G.A. Maugin and A. Chudnovsky
Session T2B. 10:20 AM - 12:10 PM
Room: 341 Squires
Co-Chairs: G.A. Maugin and A. Chudnovsky

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1. Conservation Laws in Nonlinear Continua, Jovo Jaric

2. Configurational Forces and Chemical Potential Tensor in Thermodynamics of Solid System with Rearrangement, Michael Grinfeld
3. Energy Momentum Tensor in Case of Martensitic Phase Transformation in Ductile Materials, Mohammed Cherkaoui and Maurice Berveiller
4. Geometrical Modeling of Materials Aging, Sergei Preston and Alexander Chudnovsky
5. Different uses of the Notion of Configurational Force in Computational Materials Mechanics, Gerard A. Maugin

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EXPERIMENTS IN FRACTURE MECHANICS
In Honor Of
Professor C. W. Smith

Organizer: A. Shukla
Session T2C. 10:20 AM - 12:10 PM
Room: Conf. Room E, DBH&CC
Co-Chairs: J. Newman and W.L. Fourney

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1. Use of Fracture Toughness and Constraint to Predict the Load and Location for Initiation of Crack-Growth in Surface Cracks, Walter G. Reuter
2. Crack Velocity Effects on the Brittle-Ductile Transition in Silicon, Brook D. Ferney and K. Jimmy Hsia
3. Fracture Properties Assesment of A710 Weldments using Sub-Size Specimens, Wilson R. Lloyd and W.G. Reuter
4. A Fatigue Crack Closure Measurement Technique for Real Components, Majid Mirjzaei and M. Shariati
5. Controlled Fracture System of Single Edge Notched Specimens for R-Curve Determination of Ceramics, Satoshi Takagi and Hidetoshi Nakano

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RECENT DEVELOPMENTS IN THE STUDY OF IMPACTS ON COMPOSITE MATERIALS

Organizers: S. Abrate and G. Schoeppner
Session T2D. 10:20 AM - 12:10 AM
Room: Conf. Room C, DBH&CC
Co-Chairs: R.K. Kapania and G.A. Schoeppner

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1. Dynamic Compression Testing of Particle Reinforced Polymer Roll Cover Materials, T. Vuoristo1, V.-T. Kuokkala1 and E. Keskinen
2. Dynamic Testing of Fibre Polymer Matrix Composite Plates Under In-Plane Compression, Gérard Gary and Han Zhao
3. Delamination in Laminated Composite Shell Panels Subjected to Low-Velocity Impact, S. Ganapathy and K. P. Rao
4. Damage Thresholds for Low Velocity Impacts on Laminated Composite Materials, G. Schoeppner
5. Thickness Effects on Impact Perforation Resistance of Composite Laminates, Dahsin Liu and Basavaraju B. Raju.

DURABILITY OF MATERIALS
In Honor Of
Professor Kenneth L. Reifsnider

Organizer: C. Bakis
Session T2E. 10:20 AM - 12:10 PM
Room: Conf. Room A, DBH&CC
Co-Chairs: Y.J. Weitsman and J. Lesko

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1. Composite Laminates Exposed to High Heat Flux Levels, Mark Tuttle, Ann Mescher and Mark Potocki
2. Single-Fiber Fragmentations of AS-4 Carbon Fiber Embedded in Epon 828 under the Effect of Elevated Temperatures, M. Brady Walther, Kenneth L. Reifsnider, Madhu Madhukar and Mohamed S. Genidy
3. Influence of Temperature on the Durability of Polymer Matrix Composites, Céline A. Mahieux and Kenneth L. Reifsnider
4. Aging of a Glass Reinforced Epoxy Resin, G. Zaffaroni, C. Cappelletti, U. Mariani and M. Rigamonti
5. Stress-Rupture and Overstressing: A Discussion of Testing Methodologies to Assess the Durability and Reliability of Continuous Fiber-Reinforced Ceramic Matrix Composites, Edgar Lara-Curzio

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NONSMOOTH/NONCONVEX MECHANICS
In Honor of
Professor P. D. Panagiotopoulos

Organizers: D.Y. Gao, R.W. Ogden, G.E. Stavroulakis
Session T2F. 10:20 AM - 12:10 PM
Room: Rear Auditorium, DBH&CC
Co-Chairs: Q.S. Nguyen and H. Stumpf

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1. Impact Phenomena in Rollercoasters, Friedrich Pfeiffer
2. On the Analysis of Crack Growth and Material Damage Applying Variational Techniques, Helmut Stumpf
3. Spatially Nonlocal Problems in Continuum Mechanics, Deborah Brandon and Robert C. Roger
4. Impending Motions: Avalanches, Landslides etc., Wei H. Yang
5. Title to be announced, David Steigmann

NONLINEAR VIBRATIONS
AND PERTURBATION METHODS
In honor of Professor Ali Nayfeh

Organizer: D. Mook
Session T2G. 10:20 AM - 12:10 PM
Room: Front Auditorium, DBH&CC
Co-Chairs: S. Noah and K. Popp

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1. Using Mathematica for the Galerkin Representation of Nonlinear Plate Equations, J. Lee
2. Symbolic-Numeric Approach to Solve for the Dynamics of a Satellite, N. Sanchez

3. Control of Bifurcations and Chaos in Time-Periodic Nonlinear Systems, A. David, V. Deshmukh and S. C. Sinha
4. Feedback Control of Axial Flow Compressor Stall Phenomena, M. A. Nayfeh and E. H. Abed
5. Dynamics Characterization, Control, and Damage Detection of Structures Using a Scanning Laser Vibrometer, P. F. Pai, S. Jin, S-Y Lee and B. Rommel

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GRADIENT PLASTICITY AND ITS APPLICATIONS

Organizers: T. Hasebe, H.M. Zbib and H. Gao
Session T2H. 10:20 AM - 12:10 PM
Room: Brush Mountain B, Squires
Co-Chairs: T. Hasebe and A.A. El-Azab

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1. Historical Perspective of the Development of Gradient Plasticity, Y. Huang and H. Gao
2. A Multiscale Framework for Mechanism-Based Strain Gradient (MSG) Plasticity, H. Gao, Y. Huang, W. D. Nix and J. W. Hutchinson
3. Dislocation Models for Strain Gradient Plasticity, Y. Huang, H. Gao, W. D. Nix and J. W. Hutchinson
4. Strain Gradient Effects in Bending of Sheet Metal, J. Y. Shu and J. S. Stolken
5. Modeling of the Damage of Silicon Particles in Aluminum Cast Alloy with Finite Element Analysis, Shichen Yang and Arun M. Gokhale

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RECENT ADVANCES
IN EXPERIMENTAL MECHANICS
In Honor Of
Professor Daniel Post

Organizers: B. Han and P. Ifju
Session T2I. 10:20 AM - 12:10 PM
Room: Conf. Room F, DBH&CC
Co-Chairs: Y. Guo and B. Chao

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1. Investigation of Strain Localized Band by Laser Speckle Interferometry, Suprapedi, Rini Widiastuti and Satoru Toyooka
2. Far Infrared Fizeau Interferometry, K. Verma and B. Han
3. An Analysis of Ball Grid Array Interconnects Utilizing High Sensitivity Moiré Interferometry, Michael C. Larson and Melody Arthur Verges
4. Residual Stresses in Composites, Peter Ifju, Xiaokai Niu and Shao-Chun Liu
5. Impact Strength of Structural Joints, Bill Y.J. Chao, Kenneth Miller and P.C. Wang

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NEW ADVANCES IN SMART
MATERIAL STRUCTURES CONTROL
AND DAMAGE DETECTION

Organizers: L. Librescu and M. Di Sciuva
Session T2J. * 10:20 AM-12:32 PM
Room: 345 Squires
Co-Chairs: P. Blanas and G.P. Carman

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1. Advances and Trends in Dynamics of Piezoelectrics, M. Cengiz Dokmeci and G. Askar Altay
2. A Finite Element Study of the Edge Effects in Adaptive Structures, Paolo Gaudenzi
3. Health Monitoring of Structures using Directional Piezoelectrics, Patricia Quin, Luis Palacios, Gregory P. Carman and Jason Speyer
4. Optimization of Piezoelectric Actuator Locations by Genetic Algorithms, Rakesh K. Kapania and Lizeng Sheng
5. Nonlinear Electro-Mechanical Coupling in Smart Electrostrictive Composites, T. Somphone, H. Li and N. Yu
6. Computational Solid-Solid Phase Transformations with a Gibbs Function, Sanjay Govindjee and Garrett Hall

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SHEAR BANDING AND DYNAMIC FAILURE
In Honor Of
Dr. T. W. Wright

Organizers: G. Ravichandran and A.M. Rajendran
Session T2K. 10:20 AM - 12:10 PM
Room: 234 Squires
Co-Chairs: S.E. Schoenfeld and J. Beatty

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1. Effect of Viscoplastic Flow Rules on the Instability Strain, Shear Band Initiation Strain and the Strain Corresponding to the Shear Band Spacing in a Thermoviscoplastic Material, R. C. Batra and L. Chen
2. On Repeated Adiabatic Shear Band formation during High-Speed Machining, Timothy J. Burns, Matthew A. Davies and Christopher J. Evans
3. An Adiabatic Shear Banding Model for Installation into a Lagrangian Wavecode, Martin Raftenberg
4. Damage and Fracture in Laminate Composites under Impact Loading, K. Minnaar and M. Zhou
5. Damage Initialization for Modeling of Dynamic Shear Banding, Michael B. Prime and Rick L. Martineau

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VIBRATIONS AND CONTROL
In Honor Of
Professor Leonard Meirovitch

Organizer: H. Baruh
Session T2L. 10:20 AM - 12:10 PM
Room: 219 Squires
Co-Chairs: A. Baz and M. Ahmadian

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1. Shape and Vibration Control of a Multibody Flexible Structure using Recurrent Neural Networks, F. Berneli-Zazzera, A. E. Finzi, M. Romano and M. Tomasi
2. Modeling of Flexible Mechanisms by Constrained Coordinates, V. Radisavljevic and H. Baruh,

3. Multiple Contact in Multi-Body Systems, H. Bremer
4. A Model Cockroach Leg for Biologically-Inspired Sensori-motor Studies, M. Birch, R. Quinn, R. Ritzmann and S. Zill
5. Another Look at the Describing Equations of Dynamics, H. Baruh

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INSTABILITY IN SOLIDS AND STRUCTURES
Sponsored by ASME/AMD Technical Committee
on Instabilitiy in Solids and Structures

Organizers: S. Kyriakides and N. Triantafyllidis
Session T2M. 10:20 AM - 12:10 PM
Room: 236 Squires
Co-Chairs: C. Q. Ru and K. Langer

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1. Stability of Curved or Kinked Cracks, B. Yang and K. Ravi-Chandar
2. Instabilities in Twisted Plates, Eric M. Mockensturm, C. D. Mote, Jr.
3. Singularities at a Notch Tip in Transversely Isotropic Piezoelectric Medium Under Axisymmetric Deformation, Y. L. Li and K. Watanabe
4. Thermal Stress Driven Interfacial Debonding of Passivated Interconnect Lines, C. Q. Ru
5. The Study of Instability and Failure by the Virtual-Internal-Bond (VIB) Method, P. Zhang and Y. Huang, H. Gao and K. C. Hwang

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FRACTURE

Session T2N. 10:20 AM - 12:10 PM
Room: Conference Room G, DBH&CC
Co-Chairs: I.S. Raju

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1. Atomistic Simulations Of Fracture in FCC Materials, Diana Farkas
2. MD Simulation of Dynamic Atom-Order Void Formation in FCC Metal, M. Makino, T. Tsuji and N. Noda
3. Complementary Pairs of Eigenvalues in Generalized Wedges, Seyoung Im
4. Thermodynamic Description of Ductile Fracture. Similarity with Phase Transitions, Valery I. Levitas
5. Two Models of Fatigue Crack Initiation in Aluminium Alloy, Xing Bin, Anquez Louis, Bathias Claude

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12:10 PM - 1:20 PM Lunch Break

Tuesday Afternoon: 1:20 PM - 3:10 PM
*(Unless Otherwise Noted)

ADVANCES IN THE CONTINUUM
MECHANICS AND THERMODYNAMICS
OF MATERIAL BEHAVIOR
In Honor Of
Professor Roger Fosdick

Organizer: Y.-C. Chen
Session T3A. 1:20 PM - 3:10 PM
Room: Brush Mountain A, Squires
Co-Chairs: C.O. Horgan and R. Ogden

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1. Are There More Than Classical Newtonian Forces? Morton E. Gurtin
2. Finite Scale Microstructures in Nonlocal Elasticity, Lev Truskinovsky
3. Slip Bands and Stress Oscillations in Bars, Gianni Royer-Carfagni
4. Finite Amplitude Waves in Special Incompressible Viscoelastic Solids, Giuseppe Saccomandi
5. On Infinitesimal Shear, Philippe Boulanger and Michael Hayes

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MECHANICS OF CONFIGURATIONAL
FORCES IN MATERIALS

Organizers: C.H. Wu, G.G.A. Maugin and A. Chudnovsky
Session T3B. 1:20 PM - 3:10 PM
Room: 341 Squires
Co-Chairs: A. Chudnovsky and C.H. Wu

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1. Do the Laws of Nature Possess a Variational Structure? Victor Berdichevsky
2. Steady Configurational Force on an Inhomogeneity Interacting with Elastic Waves, Boris Gommerstadt
3. Configurational Forces in Discrete Elastic Structures, Manfred Braun
4. Comparison of Micro-cracked Continua: Contact Mechanics Based Model and Weakly Continuous Model, Lalo R. Rakotomanana and N. Ramaniraka
5. Kinematics and Driving Forces of Crack Layer Evolution, Alexander Chudnovsky and Yuri Shulkin

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EXPERIMENTS IN FRACTURE MECHANICS
In Honor Of
Professor C. W. Smith

Organizer: A. Shukla
Session T3C. 1:20 PM - 3:10 PM
Room: Conf. Room E, DBH&CC
Co-Chairs: F. Erdogan and R. Chona

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1. Statistical Aspects of Damage Development in Crossply Composite Laminates, J.J. Luo, I.M. Daniel and Z. Sun
2. Dynamic Cracking in Brittle Materials Under Multiaxial Compression, S. Lee and G. Ravichandran

3. Investigation of K Dominance by Simultaneous Use of Full Field Interferometry and the Optical Method of Caustics, S. Prabhu and J. Lambros
4. The Surface Flaw Problem as a Guide for Optimization Procedures, E. Sommer and M. Rombach
5. The Role of Stochastic Modelling in Problems of Fracture and Fatigue, Heinz W. Bargmann

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MECHANICS AND MECHANISMS OF
FAILURE OF INTERFACES
IN ENGINEERING MATERIALS
Sponsor: Wave Propagation Committee

Organizer: S.A. Meguid
Session T3D. 1:20 PM - 3:10 PM
Room: Conf. Room C, DBH&CC
Co-Chairs: V.K. Kinra and A. Mal

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1. Micromechanical Modelling of Dynamic Interaction of Cracks in Piezoelectric Materials, X.D. Wang and S.A. Meguid
2. Micromechanics-Based Interfacial Fracture in Electronic Packaging Assemblies, Ji Eun Park, Iwona Jasiuk, and Aleksander Zubelewicz
3. Effect of Humidity and Temperature on the Tensile Strength of Oxide/Polyimide Interfaces in Multilayer Devices and Packages, Vijay Gupta, Robert Hernandez, and Micheal O'Brein
4. Modeling of Interphases in Fiber-Reinforced Composites with Interface Cracks Using the Boundary Element Method, Yijun Liu and Nan Xu
5. Evolution of Interfacial Voids in Composites, Vasyl Michael Harik

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DURABILITY OF MATERIALS
In Honor Of
Professor Kenneth L. Reifsnider

Organizer: C. Bakis
Session T3E. 1:20 PM - 3:10 PM
Room: Conf. Room A, DBH&CC
Co-Chairs: R. Talreja and C. Hoppel

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1. Synergystic Effects of Aging and Damage on PMCs, Cate Brinson and Nagendra Akshantala
2. Characterization, Modeling, and Prediction of Deformation for Chopped Fiber Composites, M. Elahi and Y.J. Weitsman
3. Viscoelastic Modeling for Thick-walled Composite Cylinders Subjected to Temperature and Time Cycles, Jerome T. Tzeng
4. Effects of Resin Cure on the Durability of IM7/PETI-5 Composites, David R. Veazie and Emilie J. Siochi
5. Anomalous Hygrothermal Effects In Polymers and Polymer Composites: Modeling And Testing, Samit Roy

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NONSMOOTH/NONCONVEX MECHANICS
In Honor of
Professor P. D. Panagiotopoulos

Organizers: D.Y. Gao. R.W. Ogden and G.E. Stavroulakis
Session T3F. 1:20 PM - 3:10 PM
Room: Rear Auditorium, DBH&CC
Co-Chairs: S. Saitoh and D. Russell

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1. Runge-Kutta Methods in Optimal Control, William W. Hager
2. Nonisotropic Spatiotemporal Chaotic Vibration of the Wave Equation due to Mixing Energy Transport and a van der Pol Boundary Condition, Goong Chen
3. Controls of the Outputs of Linear and Nonlinear Systems in Terms of Their Inputs, Saburou Saitoh
4. Exact Null-Controllability for the Semilinear Heat Equation with Mobile Controls of Degenerate Support, Alexander Khapalov
5. Fluid Dynamics from the Viewpoint of Blown-ups, Yi Lin

NONLINEAR VIBRATIONS
AND PERTURBATION METHODS
In Honor Of
Professor Ali Nayfeh

Organizer: D. Mook
Session T3G. 1:20 PM - 3:10 PM
Room: Front Auditorium, DBH&CC
Co-Chairs: A. Baz and A. Noor

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1. Fault Detection Based on Adaptive LMS Modeling and Analysis for UUV, L. Ni and C. R. Fuller
2. Output Feedback Control of Underwater Vehicle Using Nonlinear State Observer, M-H. Kim and D. J. Inman
3. Neural-Network and Fuzzy-Logic Control to Suppress the Rolling Motion in Ships by Means of Active Fins, D. Liut, D. Mook and H. F. VanLandingham
4. Sensitivity Effects of Bi-Axial In-Plane Elastic Constraints on Chaotic Oscillations of a Cylindrical Panel, K. Nagai
5. Derivation of Inverse Nonlinear Control Law for a Ship Crane with Maryland-Rigging System, B. Kimiaghalam, A. Homaifar, M. Bikdash and B. Wen

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GRADIENT PLASTICITY AND ITS APPLICATIONS

Organizers: T. Hasebe, H.M. Zbib and H. Gao
Session T3H. 1:20 PM - 3:10 PM
Room: Brush Mountain B, Squires
Co-Chairs: Y. Huang and H. Gao

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1. Reconstruction of Dislocation Images from Plastic Strain Gradient and Some Related Problems, T. Ohsashi
2. Higher Order Crystal Plasticity Based on Non-Riemannian Geometrical Theory of Dislocations and Defects, T. Hasebe and Y. Imaida

3. A Theory of Plastic Spin and Internal Stress Based on Non-Riemannian Plasticity, K. Shizawa and H. M. Zbib
4. Boundary Layer Effects in Shear Deformation of a Single Crystal Layer, J. Y. Shu, N. A. Fleck, E. Van der Giessen and A. Needleman
5. The Asymptotic Crack Tip Fields in Phenomenological Strain Gradient Plasticity, J. Y. Chen, Y. Wei, Y. Huang, J. W. Hutchinson and K.-C. Hwang

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RECENT ADVANCES
IN EXPERIMENTAL MECHANICS
In Honor Of
Professor Daniel Post

Organizers: B. Han and P. Ifju
Session T3I. 1:20 PM - 3:10 PM
Room: Conf. Room F, DBH&CC
Co-Chairs: R. Boeman and H. Kato

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1. Mechanism Generating Residual Stress in Nylon and Polypropylene During Injection Molding, Masashi Yamabe and Minoru Shimbo
2. The Optical Technique of Coherent Gradient Sensing in Experimental Mechanics: A Review, Ares J. Rosakis and Hareesh V. Tippur
3. Mechanical Characterization of Cord/Rubber Composites, Isaac M. Daniel, Shiguo Rao and David McFarlane
4. Shadow Moiré using Talbot Distance, Yinyan Wang
5. Influence of Stitching on the Strain Distribution in Lap Shear Composite Joints, Harold E. Gascoigne and Daniel O. Adams

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NEW ADVANCES IN SMART MATERIAL
STRUCTURES CONTROL AND DAMAGE DETECTION

Organizers: L. Librescu and M. Di Sciuva
Session T3J. 1:20 PM-3:10 PM
Room: 345 Squires
Co-Chairs: A. Tylikowski and V. Giurgiutiu

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1. Structural Health Monitoring Technique using Artificial Neural Network and Structural Impedance Sensors, Vicente Lopes, Jr., Gyuhae Park, Harley H Cudney and Daniel J.Inman
2. Modeling of the Electro-Mechanical Impedance Interaction between an Active Sensor and a Damaged Structure, Victor Giurgiutiu and Craig A. Rogers
3. Actively Controlled Beams with Damaged Interfaces, M. Di Sciuva
4. Piezoelectric Absorbers of Vibrations in a Circular Plate, A. Tylikowski
5. Large Bending Actuator made with SMA Contractive Wires: Theory, Numerical Simulation and Experiments, U. Icardi

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SHEAR BANDING AND DYNAMIC FAILURE
In Honor Of
Dr. T. W. Wright

Organizers: G. Ravichandran and A.M. Rajendran
Session T3K. 1:20 PM - 3:10 PM
Room: 234 Squires
Co-Chairs: M.A. Zikry and W. M. Mullins

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1. Dynamic Shear Banding in Polymers, Z. Zhu and K. Ravi-Chandar
2. Thermomechanical Effects in Dynamic Deformation and Fracture of Glassy Polymers, Daniel Rittel
3. The Influence of Dilatation in Nonlinear Viscoelasticity and Consequences for Particulate Composites, Sairam Sundaram and W. G. Knauss
4. Transient Thermomechanical Behavior of Polymers and Polymeric Matrix Composites, Z. Li, T. W. Bjerke and J. Lambros
5. Subsonic and Intersonic Dynamic Crack Growth in Unidirectional Composites, Demirkan Coker, Ares J. Rosakis and Yonggang Y. Huang

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VIBRATIONS AND CONTROL
In Honor Of
Professor Leonard Meirovitch

Organizer: H. Baruh
Session T3L. 1:20 PM - 3:10 PM
Room: 219 Squires
Co-Chairs: R. Montgomery

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1. Band-Limited Actuator and Sensor Selection for Disturbance Rejection: Application to Structural Acoustic Control, R. L. Clark, Jr and David E. Cox.
2. Distributed Deployment of Shape Change Devices for Aircraft Flight Control–A Preliminary Design Concept Evaluation, R.C. Montgomery, D.L. Raney, M.A. Park and L.L Green
3. Commercial Active Noise and Vibration Control Solutions for Aircraft - A Variety of Solutions, L. Miller, M. Norris and D. Rossetti
4. Time Modes and Linear Systems, H. Oz and J. K. Ramsey
5. Gauss-Jacobi Nodal Distribution Method for Control of Normal-Mode Systems, L. Silverberg and G. Washington

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RECENT ISSUES IN ENGINEERING MECHANICS
In Honor Of
Professor Robert A. Heller

Organizers: S. Thangjitham and C. T. Liu
Session T3M. 1:20 PM - 3:10 PM
Room: 236 Squires
Co-Chairs: T.P. Yao and J. Heller

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1. Constitutive Relations of Micropolar Solids, Gyula Béda

2. Damage Analysis of Particulate Composite Material with Mixed Mode Crack, Y. Wei, C. L. Chow and C. T. Liu
3. Predicting Crack Growth Behavior in a Filled Polymeric Material, C. T. Liu
4. Program Development and Structural Service Life Analysis for Tactical Solid Rocket Motors, Barbara Marsh
5. Fatigue Life Sensitivity Analysis under Irregular Loading Histories, S. Thangjitham and N. E. Dowling

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FRACTURE/FATIGUE IN COMPOSITES

Session T3N. * 1:20 PM - 3:32 PM
Room: Conference Room G, DBH&CC
Co-Chairs: S. Im and M. Triplett

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1. Finite Element Study of the Debonding and Fracture Characteristics of SI Particle Clusters in Cast AL-SI Alloys, Ken Gall, Mark Horstemeyer, David L. McDowell, and Jinghong Fan
2. Width Effects on the Monotonic and Fatigue Strength of Angle-Ply Laminates, Daniel Kujawski
3. Fatigue Performance of Cruciform Joints of Q&T Steel Welded by Manual and Semi-Automatic Process, V. Balasubramanian and B. Guha
4. Saturation Transverse Crack Density and Delamination in Cross-ply Composites, J. Wei, F.S. Ji and L.R. Dharani
5. A Simple Model Relating Fracture Toughness to Cohesive Energy, Alan T. Zehnder and C. Y. Hui

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3:10 PM - 3:40 PM Refreshment Break Old Dominion Ballroom Squires

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Tuesday Afternoon: 3:40 PM - 5:30 PM
* (Unless Otherwise Noted)

ADVANCES IN THE CONTINUUM MECHANICS AND THERMODYNAMICS OF MATERIAL BEHAVIOR
In Honor Of
Professor Roger Fosdick

Organizer: Y.-C. Chen
Session T4A. * 3:40 PM - 5:52 PM
Room: Brush Mountain A, Squires
Co-Chairs: S. Spector and M. Hayes

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1. Thin Films Under Pressure, Richard James and Raffaella Rizzoni
2. An Incremental Theory of Volumetric Growth for Soft Biological Tissues, Anne Hoger
3. Transient Motion of a Twin Boundary in Anti-Plane Shear, Hungyu Tsai and Phoebus Rosakis
4. The Compatibility Constraints, Paolo Podio-Guidugli
5. Torsion of a Polymer Rod Undergoing Microstructural Changes, Alan S. Wineman
6. Microstructure in a Cubic to Orthorhombic Transition, Kevin F. Hane and Thomas W. Shield

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MECHANICS OF CONFIGURATIONAL FORCES IN MATERIALS

Organizers: C.H. Wu, G.G.A. Maugin and A. Chudnovsky
Session T4B. 3:40 PM - 5:30 PM
Room: 341 Squires
Co-Chairs: C.H. Wu and G.A. Maugin

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1. Variational Problems of Crack Equilibrium and Crack Propagation, K. Chau Le
2. Delayed Fracture of Ceramics Caused by Stress-Dependent Surface Reactions, H. H. Yu and Zhigang Suo
3. Configurational Instabilities in Rods and Plates under the Combined Effects of Elastic Stress, Surface Instability and Mass Rearrangement, Andrew N. Norris
4. Elasticity of an Interface between Two Fluids: Eshelby Tensor Perspective, Lev Truskinovsky
5. Configurational Equilibrium of Cracks Affected by Surface Stress, Chien H. Wu

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EXPERIMENTS IN FRACTURE MECHANICS
In Honor Of
Professor C. W. Smith

Organizer: A. Shukla
Session T4C. * 3:40 PM - 5:30 PM
Room: Conf. Room E, DBH&CC
Co-Chairs: G. Ravichandran and M. Sutton

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1. Criteria for Assessing Size Requirements for Standard Fracture Toughness Tests, Ravinder Chona
2. The use of Embedded Thermocouples in Dynamic Fracture Experiments, Daniel Rittel and Yoed Rabin
3. Method for the Lower Bound Field Domain Determination of Load Separation Condition in Precracked Specimens, A. N. Cassanelli and L. A. de Vedia
4. Application of Fiber Optic Sensor to Detect a Fatigue Crack Propagation of Bridge Structures, Toshiyuki Oshima, Muhammad S. Rahman, Shuichi Mikami, Ikue Tanba, Ron Kriz and Jack Lesko
5. Fiber Bridging and R-Curve for Interlaminar Fracture of Unidirectional Epoxy-Carbon Composites, V. Tamuzs and S.Tarasovs

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MECHANICS AND MECHANISMS OF FAILURE OF INTERFACES IN ENGINEERING MATERIALS
Sponsor: Wave Propagation Committee

Organizer: S.A. Meguid
Session T4D. * 3:40 PM - 6:14 PM
Room: Conf. Room C, DBH&CC
Co-Chairs: G. Weng and S. Datta

1. Optical Non-Destructive Inspection of Interfaces in Coatings, J.F. Silva Gomes, J.M. Monterio and M.A.P. Vaz
2. Impact Damage Characterization in Composite Panels using Waveform-Based Acoustic Emission, Ajit Mal and Madhu Vemuri
3. Mean Field Estimates of the Response of Composites with Nonlinear Interface, Alan J. Levy and Zhifa Dong
4. Ultrasonic Characterization of Interface Layers in a Fiber-Reinforced Composite, S. K. Datta, W. Zhuang and A.H. Shah
5. Measurement of Interface Fracture Toughness of Two Ceramic Clays, Leslie Banks-Sills, Nahum Travitzky and Dana Ashkenazi
6. Effect of Thermal Residual Stresses on the Apparent Polymer/Metal Interfacial Toughness, Matthew Yao and Jianmin Qu
7. Characterization and Evolution of Interfacial Damage in Microelectronic Devices Induced by Accelerated Life Testing, Jongwoo Park, D. G. Harlow and H. F. Nied

DURABILITY OF MATERIALS
In Honor Of
Professor Kenneth L. Reifsnider

Organizer: C. Bakis
Session T4E. * 3:40 PM - 6:14 PM
Room: Conf. Room A, DBH&CC
Co-Chairs: M. Tuttle and T.A. Godfrey

1. Durability of Bonded Structures, W. S. Johnson, T. Q. Cobb and K. P. Lubke
2. Effect of Moisture Absorption on Fracture Toughness of Composite/Wood Bonded Interface, Julio F. Davalos and Pizhong Qiao
3. Evaluation of the Durability of Bimaterial Interface using a Shaft-Loaded Blister Test, Kin Liao, Kai-Tak Wan and Sujanto Widjaja
4. Strength Of Mechanical Fasteners In Joining Composite Laminates with Various Thicknesses, Dahsin Liu and Basavaraju Raju
5. Influence of Coatings on the Stresses Around Structurally Embedded Fibre Optic Sensors, Krishnan Jayaraman and Kenneth Reifsnider
6. Durability of Polymeric Composite Materials under Long-Terms Flight Profile Testing, Karen S. Whitley and Thomas S. Gates
7. Mechanical Properties of Highly Porous Ceramic Composites for Infrared Burners in the Papermaking Industry, B. K. Ahn and K.L. Reifsnider

NONSMOOTH/NONCONVEX MECHANICS
In Honor of
Professor P. D. Panagiotopoulos

Organizers: D.Y. Gao, R.W. Ogden and G.E. Stavroulakis
Session T4F. * 3:40 PM - 5:30 PM
Room: Rear Auditorium, DBH&CC
Co-Chairs: G. Chen and G.E. Stavroulakis

1. Primal-Dual Method for Nonconvex Dynamic Systems with Applications to Post-Buckling of Nonlinear Beams, Luis M. Moreschi, David Y. Gao and M. P. Singh
2. NonLinear Response of Flat and Curved Panels Exposed to Thermomechanical Loading, M. P. Nemeth, J. H. Starnes, Jr., L. Librescu and W. Lin
3. Formation of Nonlinear Plates, David Russell
4. A Dual Formalism for the Dynamics of Constrained Mechanical Systems, Hiroaki Yoshimura and Takehiko Kawase
5. Title to be announced, Ren-huai Liu

NONLINEAR VIBRATIONS
AND PERTURBATION METHODS
In Honor Of
Professor Ali Nayfeh

Organizer: D.Mook
Session T4G. * 3:40 PM - 6:14 PM
Room: Front Auditorium, DBH&CC
Co-Chairs: J. Wauer and J. Balthazar

1. Uncertainty Analysis of Composite Structures, A. K. Noor, J. H. Starnes, Jr. and M. J. Peters
2. Nonlinear Modal Interactions of Shallow Suspended Cables, V. N. Pilipchuk and R. A. Ibrahim
3. Nonlinear Sliding-Mode Control of a Full-Scale Steel Structure, M. P. Singh, E. E. Matheu and L. E. Moreschi
4. Large Amplitude Nonlinear Vibration of Multibody Systems, A. A. Shabana
5. Effect of Polymer Rheology on Nip Oscillation Dynamics in Covered Roll System, E. Keskinen, M. Cotsaftis and L-H. Yuan
6. Dynamic Material Properties of Rubber Hoses using a Genetic Algorithm, M. S. Qatu, E. Smid and M. L. Dougherty, Sr.
7. The Non Ideal Dynamics of a Nonlinear Portal Frame, R. M. L. R. F. Brasil, J. M. Balthazar and D. T. Mook

GRADIENT PLASTICITY AND ITS APPLICATIONS

Organizers: T. Hasebe, H.M. Zbib and H. Gao
Session T4H. 3:40 PM - 5:30 PM
Room: Brush Mountain B, Squires
Co-Chairs: H. Gao and H. M. Zbib

1. A Physical Theory of Single-Crystal Plasticity with Dislocation Structures: Effective Behavior and Scaling Laws, M. Ortiz, E. A. Repetto and L. Stainier
2. Gauge Field Theory of Dislocations and New Approach Toward Collective Behavior of Dislocations, T. Hasebe and Y. Imaida
3. Crystal Plasticity with Non-Homogeneously Slip, S. Dj Mesarovic
4. Elastic/Crystalline Viscoplastic Finite Element Analyses of Single and Large-Size Crystal Plates Deformations and its Experimental Verification, E. Nakamach, K. Hiraiwa and M. Harimoto
5. Grain Size Effect for the Polycrystal's Yield Surface in Strain Gradient Plasticity, D. D. Sam and V. P. Smyshlyaev

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RECENT ADVANCES
IN EXPERIMENTAL MECHANICS
In Honor Of
Professor Daniel Post

Organizers: B. Han and P.Ifju
Session T4I. 3:40 PM - 5:30 PM
Room: Conf. Room F, DBH&CC
Co-Chairs: H. Morimoto and X. Yan

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1. On using Fractal Dimension as a Measure of Composite Damage, Feng Jin and Fu-Pen Chiang
2. Non-Destructive Tests of Latex Membrane with Electronic Speckle Pattern Interferometry, L.J. Jiang and A. Asundi
3. An Optimized Cruciform Test Geometry for Measuring Fiber/Matrix Interfacial Normal Strength, Vernon Bechel, G. P. Tandon and R.Y. Kim
4. Interferometric Measurement of Strains in Thin Tensile Specimens, William N. Sharpe, Jr
5. Optical Grating Diffraction Method from Strain Microscope to Strain Gauge, Anand Asundi and Bing Zhao

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NEW ADVANCES IN SMART MATERIAL
STRUCTURES CONTROL AND DAMAGE DETECTION

Organizers: L. Librescu and M. Di Sciuva
Session T4J. 3:40 PM-5:30 PM
Room: 345 Squires
Co-Chairs: V. Poterasu and R. Schmidt

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1. Dynamics of an Active and Passive Controlled Guideway Structure under Moving Load, Roman Bogacz, Szymon Imielowski and Karl Popp
2. Power Flow Analysis of Electronically Integrated Smart Devices, D. Lindner and T. Ikuma
3. H Control and Haar Wavelet Transform for Adaptive Aircraft Wings, V.F. Poterasu,
4. Two-Dimensional Modeling of Laminated Piezoelectric Composites: Analysis and Numerics, A. Fernandes and J. Pouget
5. Nonlinear Theory and Finite Element Method for Static and Trasient Analysis of Smart Beams and Arches with Distributed Piezoelectric Control, J. Chroscielewski and R. Schmidt

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SHEAR BANDING AND DYNAMIC FAILURE
In Honor Of
Dr. T. W. Wright

Organizers: G. Ravichandran and A.M. Rajendran
Session T4K. * 3:40 PM - 5:52 PM
Room: 234 Squires
Co-Chairs: K.T. Ramesh and R. P. Singh

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1. Constitutive Models for High-Strain-Rate Deformation of Metals Accounting for the Functional Dependence of the Fraction of Plastic Work Converted to Heat, S. Zhuang and G. Ravichandran
2. Grain-Boundary Effects and Ductile Failure Initiation and Evolution in Porous Crystalline Aggregates, W. Ashmawi and M. A. Zikry
3. Orientation Effects on Shear Localization in Ti-6Al-4V, Scott E. Schoenfeld and Bimal Kad
4. Shear Localization in BCC Metals, A. M. Lennon and K. T. Ramesh
5. The Modeling of Subgrain Structures in Single Crystals, M. Ortiz, Eduardo A. Repetto and L. Stainier
6. Compressive Failure of Rocks by Shear Faulting, Vijay Gupta and J. S. Bergstrum

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DYNAMIC PROBLEMS

Session T4L. 3:40 PM - 5:08 PM
Room: 219 Squires
Co-Chairs: H. Y. Yu

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1. Nonlinear Dynamic Analysis and Modeling of Abrupt Failures for Rotating Machines, Chen Anhua, Liu Deshun, Zhu Pingyu
2. The Vibrational Characteristics of Turbojet Engine using FEA P. Ravinder Reddy, A. Pavan Kumar, I. Pavan Kumar and K. Satya Prakash
3. Geometrical Non-linear Forced Vibration of Fully Clamped Plates with Internal Resonance, P. Ribeiro and M. Petyt
4. Influence of Strakes on Dynamics of Tall Chimney, S. Raghava Chary

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RECENT ISSUES IN ENGINEERING MECHANICS
In Honor Of
Professor Robert A. Heller

Organizers: S. Thangjitham and C. T. Liu
Session T4M. 3:40 PM - 5:52 PM
Room: 236 Squires
Co-Chairs: H. Irschik and T. Kuppusamy

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1. United States Practice/Future Direction of Limit States Design, R. M. Barker
2. Safety of Existing Structures, T. P. Yao
3. Reliability Analysis and Functional Estimation Method of Network by Considering Input Variations, T. Chiba, K. Nishizaki and M. Asano
4. Nonlinear Seismic Response of Concrete Gravity Dams, E. E. Matheu, R. L. Hall, R. M. Ebeling
5. Sensitivity Analysis of Multi-Girder Bridge Systems, M. P. Singh, S. Thangjitham, and S. Singh
6. The Effects of Imperfection Sensitivity on the Stability of Isotropic/Composite Cylindrical Shells with Internal, Nonlinear Elastic Foundations, H. P. Li and R. A. Heller

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CONSTITUTIVE RESPONSE OF
NON-TRADITIONAL MATERIALS

Organizer: S. Ghatuparthi
Session T4N. * 3:40 PM - 5:52 PM
Room: Conference Room G, DBH&CC
Co-Chairs: M. Zhou and D.C. Davis

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1. Influence of Strain Rate on Mechanical Properties of Nanocrystalline Metals, D. Jia and K.T. Ramesh
2. Shear Fatigue Issues of Sandwich Core Materials, Korey T. Kiepert and D.L. Sikarskie
3. Mechanics of Micro- and Nano-Indentation: A Model of Mechanism-based Strain Gradient (MSG) Plasticity, Z. Y. Xue, Y. Huang, H. Gao and Z. C.Xia
4. Time-dependent Behavior of Piezoceramics under Transient Mechanical Loads, J. Weage and M. Zhou
5. Characterization of Shape Memory Alloys for the Mechanics Aided Design of Actuation Devices, Charles Moore and Hugh A. Bruck
6. Dynamic Compression Behavior of Nano Crystalline Tantalum Consolidated by Plasma Pressure Compaction, Sang H. Yoo, K. Sethuram, Raja Kalyanaraman, T.S. Sudarshan and R. Dowding

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Tuesday Evening: 6:00 PM - 7:PM
Cash Bar - Owens Hall

Tuesday Evening: 7:00 PM - 9:30 PM
Banquet - Owens Hall

Wednesday June 30, 1999

Registration
7:30 AM - 4:00 PM
Old Dominion Ballroom, Squires

Wednesday Morning: 8:00 AM - 9:50 AM
*(Session W1G Begins at 7:16 AM)

CONTINUUM MECHANICS

Session W1A. 8:00 AM - 9:50 AM
Room: Brush Mountain A, Squires
Co-Chairs: D.E. Carlson and M. Hilgers

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1. Modeling Discontinuities and Long-Range Forces with an Alternative Theory of Continuum Mechanics, S. A. Silling
2. Modelling of the Functional Bone Adaptation Considering Mechanical and Non-mechanical Influencing Factors, T. Pandorf and D. Weichert, D. Wirtz and R. Forst, K. Radermacher
3. Crushing of an Elastic-Plastic (Bi-Linearly Elastic) Ring Between Rigid Plates, T. J. McDevitt, J. G. Simmonds
4. On the Stored Energy of Cold Work, T. W. Wright
5. Magnetohydrodynamic Flow of Visco-Elastic Fluid Under Periodic Body Acceleration, E.F. El-Shehawey, El-Sayed, M.E. El-Barbary and M. El-Shahed

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MECHANICS OF ELECTROMAGNETIC
MATERIALS AND STRUCTURES

Organizers: G.A. Maugin, J.S. Lee and J.S. Yang
Session W1B. 8:00 AM - 9:50 AM
Room: 341 Squires
Co-Chairs: A.F. Ghaleb and R. Fingers

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1. On the Numerical Modelization of Magnetostrictive Materials, M. Bernadou and S. He
2. Magnetic Force Formulations and Associated Magnetostriction Strains, L. Hirsinger
3. Magnetostriction Effects Modelling, M. Arib and J.L. Ille
4. A Boundary Integral Method for the Solution of the Plane Strain Problems of Uncoupled Thermo-Magnetoelasticity, M. S. Abou-Dina and A. F. Ghaleb
5. Application of the Internal Variable Formalism to the Modelling of Magnetoelasticity, L. Hirsinger, C. Gourdin and R. Billardon

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FRACTURE OF THIN FILMS,
COATINGS AND MULTI-LAYERS
Sponsored by the Fracture and Failure Mechanics
Committee of the Applied Mechanics Division

Organizers: J.L. Beuth and S.X. Mao
Session W1C. 8:00 AM-9:50 AM
Room: Conf. Room E, DBH&CC
Co-Chairs: J. Beuth and J. Kysar

1. Fracture of Electrodeposited Nanostructures, Fereshteh Ebrahimi
2. Fracture Mechanics of Integrated Circuit Structures, X. H. Liu, Z. Suo, Q. Ma and H. Fujimoto
3. True Surface Energies of Film/Substrate Interfaces, W. W. Gerberich, A. A. Volinsky, N. I. Tymiak, D. E. Kramer, J. A. Schneider and N. R. Moody
4. Crack-Like Diffusion Wedges in Polycrystalline Thin Films, Huajian Gao
5. The Mechanics of Impression Tests to Determine Film and Interface Toughnesses, Matthew R. Begley

PLASTICITY

Session W1D. 8:00 AM - 9:50 AM
Room: Room C, DBH&CC
Co-Chairs: A. S. Khan and J. Fragomeni

1. On Estimating the Tensile Strength of an Adhesive Plastic Layer of Arbitrary Simply Connected Contour,S. Alexandrov and O. Richmond,
2. Application of a Phenomenologically Based Model and a Crystal Plasticity Based Constitutive Model for Parameter Identification on the Single Crystal Alloy CMSX-4, C. Debusmann and F.G. Kollmann
3. Analysis of Pressure Vessel Welds Using BEM, Richard E. Dippery, C. V. White, V. G. DeGiorgi and Bruce M. Butler
4. Modeling of Phase Transitions in Elastoplastic Materials at Finite Strains, A.V. Idesman, V.I. Levitas and E. Stein
5. An Impression Die Forging Analysis and Determination of Preforms Using Finite Element Analysis, Mohammed A. Wasif and James M. Fragomeni

DURABILITY OF MATERIALS
In Honor Of
Professor Kenneth L. Reifsnider

Organizer: C. Bakis
Session W1E. 8:00 AM - 9:50 AM
Room: Conf. Room A, DBH&CC
Co-Chairs: G. Carman and J. M. Starbuck

1. Analysis of Failure in Textile Composite Materials with Spatially Varying Microstructure, Ronald C. Averill and Craig Carrier
2. Effect of Interfacial Damage on the Initiation of Matrix Macro-Cracks in Composites, V. M. Harik, B. K. Fink, T. A. Bogetti and J. W. Gillespie
3. Prediction of Damage in Laminated Composite Structures Containing Stress Concentrations, Ba-Nghiep Nguyen
4. Deformation and Failure of Stochastic Fibrous Networks, C.W Wang, A.M. Sastry and X. Cheng
5. Durability of Fiber Composites–the Case for Mechanism-Based Models, S. M. Spearing

MECHANICS OF CELLULOSIC MATERIALS
Sponsored by the Joint AMD/MD Committee
on Constitutive Equations

Organizers: R.W.Perkins, M.K.Ramasubramanian and G.Kyanka
Session W1F. 8:00 AM - 9:50 AM
Room: Rear Auditorium, DBH&CC
Co-Chairs: G. Kyanka

1. Mesomechanics Model for Elastic Moduli of Moderate to High-Density Paper Material, R. W. Perkins
2. A Micromechanics Explanation of Special Elastic Orthotropy of Paper, M. Ostoja-Starzewski and D. C. Stahl
3. A Modified Shear Lag Model for a Paper Fiber Network, S. K. Sinha and M. T. Kortschot
4. Constitutive Models for Paper and Other Ribbon-like Nonwovens-A Literature Review, M. K. Ramasubramanian and Y. Y. Wang
5. Fracture Analysis of Cellular Materials: A Strain Gradient Model, J. Y. Chen, Y. Huang and M. Ortiz

NONLINEAR VIBRATIONS AND PERTURBATION METHODS
In Honor Of
Professor Ali Nayfeh

Organizer: D. Mook
Session W1G. * 7:16 AM - 9:50 AM
Room: Front Auditorium, DBH&CC
Co-Chairs: D. van Campen and H. Yabuno

1. Time Series Based Model Updating in Nonlinear Systems using Singular Value Decomposition, T. D. Burton, F. Hemez, P. Beardsley, W. Rhee
2. Constructing Low Dimensional Models using Karhunen Loeve Decomposition, X. Ma and A. F. Vakakis
3. Dynamic Diagnosis of Railway Tracks by means of the Karhunen-Loeve Transformation, U. Feldmann and E. Kreuzer
4. Nonlinearity Tests, J.-U. Bruns and K. Popp
5. Hierarchical Free-Vibration Reduced Models Based Upon Non-Linear Normal Modes, C. E. N. Mazzilli, M. E. S. Soares and O. G. P. Baracho Neto
6. Modal Reduction of a Nonlinear Rotating Beam Through Nonlinear Normal Modes, E. Pesheck, C. Pierre and S. W. Shaw
7. Symbolic Computation of Normal Forms Using a Perturbation Method, P. Yu

MODELLING AND BEHAVIOR OF STRUCTURES
EXPOSED TO COMPLEX LOADING CONDITIONS

Organizer: M. Di Sciuva
Session W1H: 8:00 AM - 9:28 AM
Room: Brush Mountain B, Squires
Co-Chairs: B.A.D. Piombo and U. Icardi

1. Embedded Delamination Growth in Composite Panels under Compressive Load, A. Riccio, F. Scaramuzzino and P. Perugini
2. Scaled Model Analysis of Traffic Excited Bridge, S. Fasana, E. Giorcelli, B.A.D. Piombo and S. Sorrentino
3. Progressive Failure Analysis of Bolted Composite Joints, P. Perugini, G. D'Anna, A. Riccio, F. Scaramuzzino and N. Tessitore
4. Advanced Thermomechanical Modeling of Dynamically Loaded Materials and Structures, A. Szekeres
5. Domain of Stability of a Multi-Dimensional Magnetic Levitation Control System by Poincare-Point Mapping and Cell Trajectories Approach, Yao Hong and Xu Jian-Xue

RECENT ADVANCES
IN EXPERIMENTAL MECHANICS
In Honor Of
Professor Daniel Post

Organizers: B. Han and P. Ifju
Session W1I. 8:00 AM - 9:50 AM
Room: Conf. Room F, DBH&CC
Co-Chairs: M. Sutton and J. Wood

1. Measurements of Interlaminar Deformation along the Cylindrical Surface of Open Holes in Composite Materials, David H. Mollenhauer
2. Experimental Fracture Mechanics: A Moire Interferometry Analysis, Albert S. Kobayashi
3. Non-Post Mold Cure Compounds Study using Moire Interferometry, Chan Kai Chong, Wong Ee Hua and Anand Asundi
4. Viscoelastic Analysis of Residual Stress Generated in Thin Circular Plate, Minoru Shimbo and Masashi Yamabe
5. An Experimental Study on Dynamic Properties of a Silicon Membrane Device for Reliability Predictions, Yifan Guo and Tien-Yu Tom Lee

MODERN TRENDS IN THE FOUNDATION OF
THE THEORY OF SHELLS AND PLATES
In Honor of
Professor Daniel Frederick

Organizer: L. Librescu
Session W1J. 8:00 AM - 9:50 AM
Room: 345 Squires
Co-Chairs: K.P. Chong and L. Librescu

1. Theory of Plates and Shells Based on Nonsymmetrical Theory of Elasticity, S.A Ambartsumian
2. Bending, Buckling and Free Vibration of Non-Homogeneous Composite Laminated Cylindrical Shells using a First-Order Consistence Theory, A.M. Zenkour and M.E. Fares
3. Von Karman's Paradox and Triality in Dynamical Post-Buckling Analysis of Nonlinear Extended Plate Model, David Yang Gao
4. On Finite Rotation Theory and FE-Analysis of Composite Shells, I. Kreja and R. Schmidt
5. Three-Dimensional Theory for Analysis of Thick Damaged Laminated Beams with C Finite Element Suitability, U. Icardi

FLOW LOCALIZATION AND
MATERIAL INSTABILITY

Organizers: Y. Tomita, R.C. Batra and O. Watanabe
Session W1K. 8:00 AM - 10:12 AM
Room: 234 Squires
Co-Chairs: O. Watanabe and Y. Tomita

1. Numerical Simulation of the Localization Behavior of Hydrostatic Stress-Sensitive Metals, Michael Brtirlig, Simons Berger and Hans Obrecht
2. Post-Critical Plastic Deformation Pattern in Incrementally Nonlinear Materials, H. Petryk and K. Thermann
3. Necking in Sheet Forming: Influence of Macroscopic and Microscopic Properties of Materials, Nathalie Boudeau and Jean-Claude Gelin
4. Prediction of Limit Strain in Sheet Metal Forming Processes by 3-D Analysis of Localized Necking, Koichi Ito, Koichi Satoh, Moriaki Goya and Tohru Yoshida
5. Localization of Plastic Deformation along Grain Boundaries in a Hardening material, Y.-L. Shen, W. Li, D. L. Sulsky and H. L. Schreyer
6. Microstructure Influences on the Adiabatic Shear Localization of Tungsten Heavy Alloys, Wei, Zhigang, Hu, Shisheng, Li, Yongchi

VIBRATIONS

Session W1L. 8:00 AM - 9:50 AM
Room: 219, Squires
Co-Chairs: D. Inman

1. The Damping Characteristics Analysis of Viscoelastically Laminated Beams, Tso-Liang Teng and Cho-Chung Liang
2. A Exact Helicoidal Model for Vibration of Turbomachinery Blades, C. W. Lim
3. Nonlinear Responses of Multiple Body System with Clearances, Yu-Xin Wang and Zhong-Yu Chang
4. Application of Active Constrained Layer Damping to the Vibration Suppression of Flexible Four-Bar Mechanisms, H. Ghoneim, Mansour A. Karkoub

RECENT ISSUES IN ENGINEERING MECHANICS
In Honor Of
Professor Robert A. Heller

Organizers: S. Thangjitham and C. T. Liu
Session W1M. 8:00 AM - 9:50 AM
Room: 236 Squires
Co-Chairs: M.P. Singh and I.M. Janajreh

1. Coupling of Generalized Heat and Moisture Transfer, A. Szekeres and J. Engelbrecht
2. Thermally Induced Vibrations of Composite Beams with Interlayer Slip, R. Heuer, A. Raue, and F. Ziegler
3. Membrane Analyogy for Thermally Loaded Shallow Sandwich Shells with Piezoelectric Actuation, Hans Irschik, K. Hagenauer, and M. Krommer
4. BB Reinforce Composites and Coupled Fields, A. Szekeres
5. Finite Element Modeling of Hydro-Thermal Process of Solids Application to Storage of High level Nuclear Waste, M. Wone and T. Kuppusamy

STRUCTURES

Session W1N. 8:00 AM - 9:50 AM
Room: Conference Room G, DBH&CC
Co-Chairs: D. Lindner

1. A Stochastic Evaluation Method of Control Systems for Earthquake Mitigation in Civil Structures, Jeffrey Scruggs and Douglas Lindner
2. Finite Element Analysis of Aluminium Wire Profiles in Automotive Under-hood Application, Zhidong Han, Sung Yi Judy Cheng and Aloysius Lee
3. Comparison Between Two Systems of Base Seismic Insulation, Federico Bartolozzi
4. Constitutive Rock Equation in the Northern Adriatic Basin from in-Situ Compaction Measurements, D. Baú, G. Gambolati and P. Teatini
5. Self-Centering Aseismic System with Elastic Bearings and Hydraulic Dampers, Federico Bartolozzi

9:40 AM - 10:20 AM Refreshment Break
Old Dominion Ballroom, Squires

Wednesday Morning: 10:20 AM - 12:10 PM
*Unless Otherwise Noted

ADVANCES IN THE CONTINUUM
MECHANICS AND THERMODYNAMICS
OF MATERIAL BEHAVIOR
In Honor Of
Professor Roger Fosdick

Organizer: Y.-C. Chen
Session W2A. 10:30 AM - 12:10 PM
Room: Brush Mountain A, Squires
Co-Chairs: R. Valentin and B.D. Coleman

1. Dynamics of Phase-Transforming Solids, James K. Knowles
2. Hysteresis in Solids that Undergo Displacive Phase Transformations, Kaushik Bhattacharya
3. Thermodynamics, Stability and Nonlinear Oscillations of Viscoelastic Solids, Jang-Horng Yu
4. Reflection and Refraction of Anti-Plane Shear Waves from an Elastic Phase Boundary, Thomas J. Pence and Hungyu Tsai
5. The Mullins Effect in a Pure Shear, Millard F. Beatty

MECHANICS OF ELECTROMAGNETIC
MATERIALS AND STRUCTURES

Organizers: G.A. Maugin, J.S. Lee and J.S. Yang
Session W2B. 10:20 AM - 12:10 PM
Room: 341 Squires
Co-Chairs: S. Dost and A. Spector

1. Analysis and Electric Fracture Testing of Piezoelectric Ceramics, Y. Shindo, M. Oka, and K. Horiguchi
2. A Theory of Domain Switch in Ferroelectrics, J. Li and G. J. Weng
3. Nonlinear Electroelastic Model of a Cell Membrane, A. A. Spector
4. A Two-dimensional Electroelastic Problem of a Piezoelectric Body with Two Inhomogeneities, M. Ishihara and N. Noda
5. Crack Initiation between Dissimilar Oriented Domains as a Possible Accelerated Fatigue Test, P. Chaplya and G. P. Carman.

FRACTURE OF THIN FILMS,
COATINGS AND MULTI-LAYERS
Sponsored by the Fracture and Failure Mechanics
Committee of the Applied Mechanics Division

Organizers: J.L. Beuth and S.X. Mao
Session W2C. 10:20 AM - 12:10 PM
Room: Conf. Room E, DBH&CC
Co-Chairs: S. Mao and N. Kllingbeil

1. Crack Propagation through Thermally Sprayed Ceramic Coatings, Toshio Nakamura
2. Measurement of Interfacial Toughness Loss in EB-PVD Thermal Barrier Coating Systems due to Thermal Exposure, Jack Beuth, Aditad Vasinonta, Roy Handoko, Gerald Meier, Frederick Pettit and Matthew Stiger
3. Time-dependent Interface Strength Evaluation of Thermal Barrier Coating by means of Impedance Spectroscopy Measurement at 1273K, Kazuhiro Ogawa and Tetsuo Shoji

4. Design of Ceramic Laminates with Large Threshold Strengths, Masa P. Rao, F. F. Lange, R.M. McMeeking and Glenn E. Beltz
5. Interface Crack Initiation and Growth in Metal/Ceramic Layered Materials, Scott X. Mao and M.Z. Li

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FRACTURE/FATIGUE

Session W2D. 10:20 AM - 12:10 PM
Room: Conference Room C, DBH&CC
Co-Chairs: A. Zhong and M. A. Bhatti

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1. Relationship Between Fatigue Crack Paths and Second Phase Inclusions in a Premium Cast A356 Al Alloy, Ken Gall, Nancy Yang, Mark Horstemeyer, David L. McDowell and Jinghong Fan
2. The Effects of Texture and Precipitation on Yield and Anisotropy of Al-Cu-Li 2195 Plate, Karen E. Crosby
3. The Interpretation of Low-Cycle Torsional Fracure Failures in Hardened Shafts, Frederick Hochgraf, Wade Bartlett
4. Crack Bridging Mechanism in Bone-Shaped-Short (BSS) Fiber Composites, M. Sivasambu, I.J. Beyerlein, Y.T. Zhu and J.A. Valdez
5. Effect of Specimen Geometry on Fatigue Crack Growth Behavior of Flux Cored Arc Welded Q&T Steels, V. Balasubramanian and B. Guha

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DURABILITY OF MATERIALS
In Honor Of
Professor Kenneth L. Reifsnider

Organizer: C. Bakis
Session W2E. 10:20 AM - 12:10 PM
Room: Conf. Room A, DBH&CC
Co-Chairs: S. Johnson and A. Vinogradov

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1. Fatigue Behavior of Piezoelectric Ceramics Used in Actuator Applications, Donny Wang, Eugene Fotinich, Paul Chaplya and Gregory P. Carman
2. Longitudinal Tensile Behavior of Unidirectional Filament Wound Composite Materials in Air and Vacuum, Cynthia L. Shirey, Charles E. Bakis and Christopher W. Gabrys.
3. Development of a Durability Design Methodology for Highway Structures, Jack Lesko, Tommy Cousins and Scott Case
4. Life Prediction of Composite Materials: the MRLife Approach, Scott W. Case
5. Accelerated Life Characterization of Glass/Polyurethane Under Fatigue Loads, S. C. Max Yen, Mohamad S. El-Zein and K. T. Teh

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MECHANICS OF CELLULOSIC MATERIALS
Sponsored by the Joint AMD/MD Committee
on Constitutive Equations

Organizers: R.W.Perkins, M.K.Ramasubramanian and G.Kyanka
Session W2F. 10:20 AM - 12:10 PM
Room: Rear Auditorium, DBH&CC
Co-Chairs: R.W. Perkins

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1. Utilization of Soft Rot Cavity Orientation for the Determination of Microfibril Angle, S. E. Anagnost, R. E. Mark and R. B. Hanna
2. An Insight into the Deformation of Cellulosic Fibrous Networks, W. Y. Hamad, H. Rokbaa and S. Elsayyad
3. Determination of Fiber Orientation in z-Direction of Paper with the Hough Transform, J. Thorpe
4. Shrinkage of Copy Paper During Dehydration: The Effect of the Forming Section, G. Kyanka, W. S. Nam and J. Thorpe
5. Debonding and Buckling of a Thin Film Bonded to a Rigid Surface, M. K. Ramasubramanian and Zhaohui Sun

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NONLINEAR VIBRATIONS
AND PERTURBATION METHODS
In Honor Of
Professor Ali Nayfeh

Organizer: D. Mook
Session W2G. 10:20 AM - 12:10 AM
Room: Front Auditorium, DBH&CC
Co-Chairs: M. Yoshizawa and T. Burton

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1. Some Aspects of Bifurcations in Discontinuous Dynamic Systems, D. H. van Campen and R. I. Leine
2. Analysis of Regular and Irregular Dynamics of a Non-Ideal Gear Rattling Problem, S. L. T. Souza, I. L. Caldas, J. M. Balthazar and R. M. L. R. F. Brasil
3. Stationary Bifurcation Control with Uncontrollable Linearization, T. Kim and E. H. Abed
4. Exact Periodic Response and Stability of a Continuous Mechanical Oscillator with Clearance and Impacts, P. Metallidia and S. Natsiavas
5. Bifurcation Phenomena in Impulsed Impacting Dynamical Systems, S. Lenci and G. Rega

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COMPOSITE STRUCTURES

Session W2H. 10:20 AM - 12:10 PM
Brush Mountain B, Squires
Co-Chairs: M. Triplett

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1. Local Effects Due to Warping in Straight Homogeneous or Composite Beams, Fabienne Martinez, Jean-Marie Segura and Daniel Gay
2. A Variational Approach for Performing the Equations of Motion in the case of a Composite Layer Beam in Elastic Bending, Iulian Radu and Nicolae Pandrea
3. Flexural Testing of Concrete Beams Reinforced With FRP Grids, Mohammed A. Faruqi, Sahibzada Ahmad Rafeeqi

4. Life Prediction of Gears Subjected to Random Loading, D. Hanumanna, S. Narayanan and S. Krishnamurthy

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RECENT ADVANCES
IN EXPERIMENTAL MECHANICS
In Honor Of
Professor Daniel Post

Organizers: B. Han and P. Ifju
Session W2I. 10:20 AM - 12:10 PM
Room: Conf. Room F, DBH&CC
Co-Chairs: A. Asundi and H. Gascoigne

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1. Mechanical Properties of Human Teeth using Moire Interferometry, J. D. Wood and D. H. Pashley
2. Global-Local Image Correlation System, Stephen R. McNeill, Jeffrey D. Helm, T. Glen Hanna and Micah B. Simonsen
3. Plastic Strain Mapping: New Developments and Applications, W. Tong and X. Li
4. Microstructure Induced Inhomogeneous Strain in a Particulate Composite, C. T. Liu and J. Gonzalez
5. Nondestructive Evaluation of Material Properties By using Ultrasonic Waveform Analysis, Hiroshi Kato

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MODERN TRENDS IN THE FOUNDATION OF
THE THEORY OF SHELLS AND PLATES
In Honor Of
Professor Daniel Frederick

Organizer: L. Librescu
Session W2J. 10:20 AM - 12:10 PM
Room: 345 Squires
Co-Chairs: M. Di Sciuva and W. Becker

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1. Stressed State of Layered Composite Structure with Non-Ideal Layers Contact, Ya. Grigorenko and A. Vasilenko
2. Buckling of Composite Plates by Global-Local Plate Theory, R. Gilat, T. O. Williams and J. Aboudi
3. Hygrothermal Effects on Laminated Composite Shells Containing Interfacial Imperfections, Zhen-Qiang Cheng and R.C. Batra
4. The 'Free-Corner Effect' in Thermally Loaded Laminates, W. Becker and P. Jin
5. An Improved Shear-Membrane Theory of Multilayered Shells, Claire Ossadzow and Maurice Touratier

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FLOW LOCALIZATION AND
MATERIAL INSTABILITY

Organizers: Y. Tomita, R.C. Batra and O. Watanabe
Session W2K. * 10:20 AM - 12:32 PM
Room: 234 Squires
Co-Chairs: H. Gao and M.L. Dunn

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1. Modeling and Estimation of Deformation Behavior of material with Length Scale, Yoshihiro Tomita
2. The Importance of Localization for the Development of Large Scale Structure in the Earth's Crust. L. G. J. Montési and M. T. Zuber
3. Dynamical Systems, Rate and Gradient Effects in Material Plasticity, Peter B. Beda
4. Finite Deformation Theory of Gradient Effects in Internal Time Theory of Plasticity Using Cosserat Concept, Osamu Watanabe
5. Plastic Flow Localization in Mechanism-Based Strain (MSG) Plasticity, Y. Huang and M. X. Shi
6. On the Physical Origin of the Gradient Coefficients, Elias C. Aifantis

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VIBRATIONS AND CONTROL
In Honor Of
Professor Leonard Meirovitch

Organizer: H. Baruh
Session W2L. 10:20 AM - 12:10 PM
Room 219 Squires
Co-Chairs: A.E. Finzi and J. Torok

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1. An Integrated Methodology for Structural Damage Detection, F. Bianchi and S. Ricci
2. Spectral Finite Element Modeling of the Wave Propagation in Beams Treated with Active Constrained Layer Damping, M. Ruzzene and A. Baz
3. A Model Modification Method for Structures with known Geometry, R. C. Engels
4. Some Influences of Higher Order Modeling in Damping Design, E. M. Austin and D. J. Inman
5. Predictive Feedback and Feedforward Control for Systems with Unknown Disturbances, J.-N. Juang and Kenneth E. Eure

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RECENT ISSUES IN ENGINEERING MECHANICS
In Honor Of
Professor Robert A. Heller

Organizers: S. Thangjitham and C. T. Liu
Session W2M. 10:30 AM - 12:10 PM
Room: 236 Squires
Co-Chairs: C.T. Liu and A. Szekeres

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1. Applied Failure Mechanics of Skeletal Tissues, J. M. Mansour
2. Advances in Flow Control, Carol L. May
3. Application of Probabilistic Mechanics in Radial Tires, I. M. Janajreh
4. Shell Analysis of an Inflatable Arch, R. H. Plaut, J. K. S. Goh, M. Kigudde and D. C. Hammerand

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12:10 PM - 1:20 PM Lunch Break

Wednesday Afternoon: 1:20 PM - 3:10 PM
*Unless Otherwise Noted

ADVANCES IN THE CONTINUUM MECHANICS AND THERMODYNAMICS OF MATERIAL BEHAVIOR
In Honor Of
Professor Roger Fosdick

Organizer: Y.-C. Chen
Session W3A. 1:20 PM - 3:10 PM
Room: Brush Mountain A, Squires
Co-Chairs: K. Schuler and D. Carlson

1. Large Deformation Theory of Pseudo-Elasticity and Stress Softening, R. W. Ogden
2. Domain Reorientation and the Behavior of Ferroelectric Polycrystalline Materials, Ying Zhang
3. Asymptotic and Computational Study of Singular Problems in Elasticity, Adair Roberto Aguiar
4. Non-Generic Concentrations in Shape-Memory Alloys; the case of CuZnAl, Mario Pitteri and Giovanni Zanzotto
5. Isoperimetric Inequalities for Stress or Strain Concentration at Elastic Inhomogeneities, Lewis Wheeler

MECHANICS OF ELECTROMAGNETIC MATERIALS AND STRUCTURES

Organizers: G.A. Maugin, J.S. Lee and J.S. Yang
Session W3B. 1:20 PM - 3:10 PM
Room: 341 Squires
Co-Chairs: L. Huang

1. Propagation of Guided Waves in Stratified Piezoelectric Structures, J. M. Orellana and B. Collet
2. Finite Element Analysis of Piezoelectric Crystal Plates with Higher-order Mindlin Plate Theory, J. Wang, J.-D. Yu, Y.-K. Yong and T. Imai
3. Modeling of Quartz Piezoelectric Resonators with Dissipative Material Properties and Mounting Structures, W. Zhang
4. Analysis of a Quartz Plate Thickness-shear Piezoelectric Gyroscope, H. Y. Fang, J. S. Yang and Q. Jiang
5. Electromagnetic Finite Element Analysis and Applications in Micromachines, L. Huang

FRACTURE OF THIN FILMS, COATINGS AND MULTI-LAYERS
Sponsored by the Fracture and Failure Mechanics Committee of the Applied Mechanics Division

Organizers: J.L. Beuth and S.X. Mao
Session W3C. 1:20 PM - 3:10 PM
Room: Conf. Room E, DBH&CC
Co-Chairs: T. Nakamura and G. Beltz

1. Adaptation of Double Cantilever Beam Test Method for Electronic Packaging Applications, Taigyoo Park, Shu Guo and David A. Dillard
2. A Comparison of the Free-Edge and Interface Crack Problems in Bimaterial and Multi-Layer Design, Nathan W. Klingbeil and Jack L. Beuth
3. Strain Analysis of flip-Chip Packages Using High Resolution Moire Interferometry, Mikel R. Miller, Ilyas Mohammed, Xiang Dai, Ning Jiang and Paul S. Ho
4. A Hydrophobic Self-Assembled Monolayer with Improved Adhesion to Aluminum for Deicing Application, Barbara Somlo and Vijay Gupta
5. Experiments and Simulations of Directionally Dependent Fracture along Copper/Sapphire Interfaces, Jeffrey Kysar

FRACTURE

Session W3D. 1:20 PM - 2:48 PM
Room: Conference Room C, DBH&CC
Co-Chairs: M.A. Bhatti and J. Lee

1. Estimating the Energy Release Rate For Cracks Sliding with Friction, J.L. Charvet and K. Pochiraju
2. A Computational and Experimental Analysis of Interfacial Sliding, M.C. Larson, H. Miles and W.D. Keat,
3. Implementation of a Unified Material Model in Finite Element Analysis and Simulations of Cracked Components, G. Shatil and D. J. Smith
4. Thermomechanical Fatigue Crack Growth Behavior in Superalloy GII33A, S.-L. Liu, H.-Q. Wang and X.-F. Guo

COMPOSITES

Session W3E. 1:20 PM - 3:10 PM
Room: Conference Room A, DBH&CC
Co-Chairs: S. Adjerid

1. Nonlinear Finite Element Analysis of a Single Lap Composite Joint with a Bond Crack, M. Kayupov and Y. Dzenis
2. Parametric Study of Reactive Melt Infiltration, Emily S. Nelson and Phillip Colella
3. Modeling the Behavior of Laminated Composites with Delamination and Matrix Cracks, A. Chattopadhyay and R. Thornburgh
4. Modeling of Pultruded Composite Sheet Materials and their Response under Compressive Loading, M. Saha, R. Prabhakaran and W. Allen Walters, Jr.
5. Stiffness Degradation Modelling of Composite Laminates under Loading, S. Salekeen and D. L. Jones

MECHANICS OF CELLULOSIC MATERIALS
Sponsored by the Joint AMD/MD Committee
on Constitutive Equations

Organizers: R.W.Perkins, M.K.Ramasubramanian and G.Kyanka
Session W3F. 1:20 PM - 3:32 PM
Room: Rear Auditorium, DBH&CC
Co-Chairs: M.K. Ramasubramanian

1. An Improved Shear Test Fixture using Iosipescu Specimen, J. Y. Liu, D. D. Flach, R. J. Ross and G. J. Lichtenberg
2. The Development of a Three Dimensional Constitutive Model for the Analysis of Wood, Y. Du and W. F. Cofer
3. A Finite Element Model for the Brim Forming Process, M. K. Ramasubramanian and K. Murthuraman
4. Engineering Paper Tubes to Improve Winding Performance, T. D. Gerhardt, Y. P. Qui, C. G. Johnson and D. E. Rhodes
5. Nonlinear Finite Element Modeling of Corrugated Board, J. C. Suhling, A. C. Gilchrist and T. J. Urbanik
6. Deformation Heterogeneity in Cellular AL Alloys Revealed by Surface Deformation Analysis, A.-F. Bastawros and A. G. Evans

NONLINEAR VIBRATIONS
AND PERTURBATION METHODS
In Honor Of
Professor Ali Nayfeh

Organizer: D. Mook
Session W3G. 1:20 PM - 3:10 PM
Room: Front Auditorium, DBH&CC
Co-Chairs: A. Leissa and Pai

1. Nonlinear Nonplanar Autoparametric Response of Transversely Excited Cantilever Beams, H. N. Arafat
2. Nonlinear Analysis of a Parametrically Excited Cantilever Beam (Effect of Tip Mass on Quasistationary Response), H. Yabuno, Y. Ide and N. Aoshima
3. A Nonlinear Model for Large Amplitude Oscillations of Open Cross Section Beams, F. Vestroni, A. D. Egidio and A. Luongo
4. Energy-Momentum Methods and Pod-Analysis in Nonlinear Shell and Solid Dynamics, C. Sansour, J. Sansour and P. Wriggers
5. A General Discretized Lagrangian Approach for the Nonlinear Single-Mode Vibrations of Cross-Ply Laminated Shells, J. F. Nayfeh and N. J. Rivieccio

COUPLED FIELD PROBLEMS IN SMART STRUCTURES

Organizer: H. Irschik
Session W3H. 1:20 PM - 3:10 PM
Room: Brush Mountain B, Squires
Co-Chairs: H. Irschik and E. Johnson

1. On Stress Wave Propagation in Shape Memory Alloy (SMA) Rods, F.D. Fischer, E.R. Oberaigner and K. Tanaka
2. Micromechanical Precision Pressure Sensor Incorporating SAW Delay Line, R. Weigel and H. Scherr
3. Active Vibration Control of Piezoelectric Devices, M. Kaltenbacher, A. Kugi, R. Lerch and K. Schlacher
4. Finite Element Analysis of Thermopiezoelectric Smart Structures, A. Görnandt, U. Gabbert
5. Coupled-Field and Microstructural Effects in Elastodynamics of Artificially Structured Materials, K. Majorkowska-Knap,

RECENT ADVANCES
IN EXPERIMENTAL MECHANICS
In Honor Of
Professor Daniel Post

Organizers: B. Han and P. Ifju
Session W3I. 1:20 PM - 3:10 PM
Room: Conf. Room F, DBH&CC
Co-Chairs: J. Mckelvie and D. Adams

1. Determination of Residual Stress Using Phase Shift Moire Interferometry, W. Xu and B.S.-J. Kang
2. Damage Evaluation in Low Cycle Fatigue using Laser Speckle, Akira Kato
3. Advancement of Microscopic Moiré Interferometry: Reflection and Transmission System, D. Columbus and B. Han
4. Moiré Interferometry Measurements around Embedded Fibre Optics Sensors, Gunnar Melin
5. Elasto-Plastic Response of Reinforced Concrete Walls due to Blast, D. Goldar and Vikas Wadhera

MODERN TRENDS IN THE FOUNDATION OF
THE THEORY OF SHELLS AND PLATES
In Honor of
Professor Daniel Frederick

Organizer: L. Librescu
Session W3J. 1:20 PM - 3:10 PM
Room: 345 Squires
Co-Chairs: M. Bernadou

1. The CICALA's Asymptotic Approach to the Linear Shell Theory, Ettore Antona and G.Frulla
2. A Contribution to the Nonlinear Theory of Multilayered Composite Shells Featuring Damaged Interfaces, M. Di Sciuva and L. Librescu
3. Free Vibration Analysis of Adhesively Bonded Rotating Cantilever Plate System, A. K. Yavuz
4. Multilayered Beams with Distensible Thickness, A. Di Carlo and A. Tatone
5. Material Optimization of Laminated Composites, Aleksandra Vinogradov

SHEAR BANDING AND DYNAMIC FAILURE
In Honor Of
Dr. T. W. Wright

Organizers: G. Ravichandran and A.M. Rajendran
Session W3K. 1:20 PM - 3:10 PM
Room: 234 Squires
Co-Chairs: G. Ravichandran and J. B. Stevens

1. Friction in the High Velocity Range, Alain Molinari, Y. Estrin and S. Mercier
2. Relation between Shear Banding and Penetration Characteristics of Conventional Tungsten Alloys, H. Couque, G. Nicolas and C. Altmayer
3. Friction Studies at High Sliding Velocities, H. D. Espinosa and A. Patanella
4. Thermal Couplings in Fracture Dynamics, J. R. Klepaczko
5. An Infrared High Speed Camera System for the Visualization and Measurement of Transient Temperature Fields Resulting During the Dynamic Deformation and Failure of Materials, P. R. Guduru, A. T. Zehnder, A. J. Rosakis and G. Ravichandran

VIBRATIONS AND CONTROL
In Honor Of
Professor Leonard Meirovitch

Organizer: H. Baruh
Session W3L. 1:20 PM - 3:10 PM
Room: 219 Squires
Co-Chairs: H. Bremer

1. Multi-Pulse-Width-Modulated Control of a Large Flexible Structure, F. Berneli-Zazzera, L. Dozio, P. Mantagezza
2. On Spacecraft Tumbling, A. K. Amos
3. Dynamics and Control of 1G Rotating Space Station, A. E. Finzi and M. Lavagna
4. Seismic Protection of Equipment by Rolling Isolators, M. P. Singh, Luis E. Suarez and Rildova
5. Optimal Vibration Control of Aircraft Wings Modeled as Non-Uniform Anisotropic Composite Thin-Walled Beams, Sungsoo Na, Liviu Librescu and Sungho Park

PLASTICITY

Session W3M. 1:20 PM - 3:10 PM
Room: 236 Squires
Co-Chairs: J. Fragomeni

1. A Fully Coupled Thermo-mechanical Micromechanics Model, T.O. Williams and J. Aboudi
2. Constitutive Modeling of Deformation-Induced Anisotropy in Superplasticity, Marwan K. Khraisheh
3. Deformation Inhomogeneity in a Single Crystal Superalloy During Monotonic Extension, J.H. Zhang, J.L. Liu, T. Jin, Y.B. Xu and Z.Q. Hu
4. The Electromigration-Induced Evolution of Voids with Various Initial Shapes in 2D Solids, Y.X. Gao, H. Fan and Z. Xiao
5. Dynamic Fracture Toughness of a Heat-Resisting Steel 9CR-MoVNbN, Gu Haicheng, Zhu Lihui and Zhao Qinxin

3:10 PM - 3:40 Refreshment Break Ballroom, Squires

Wednesday Afternoon: 3:40 PM - 5:30 PM
*Unless Otherwise Noted

ADVANCES IN THE CONTINUUM
MECHANICS AND THERMODYNAMICS
OF MATERIAL BEHAVIOR
In Honor Of
Professor Roger Fosdick

Organizer: Y.-C. Chen
Session W4A. 3:40 PM - 5:52 PM
Room: Brush Mountain A, Squires
Co-Chairs: A. Wineman and J. Yu

1. Constitutive Function of Elastic Materials in Finite Growth and Deformation, Yi-Chao Chen and Anne Hoger
2. Kinetics of Phase Boundaries with Edges and Junctions, Narendra K. Simha and Kaushik Bhattacharya
3. Material Instabilities in Simple Viscometric and Elongational Motions Associated with Differential Constitutive Relations, Corneliu Balan
4. Elementary Thermodynamic Arguments on Non-Newtonian Fluids, Ingo Mueller and Krzysztof Wilmanski
5. Hysteresis and Stick-Slip Phase Boundary Motion in Dynamic Models of Phase Transitions, A. Vainchtein and P. Rosakis
6. Derivation of Plate and Beam Equations for a Piezoelectric Body from a Mixed Three-Dimensional Variational Principle, S. Vidoli and R. C. Batra

NONLINEAR VIBRATIONS
AND PERTURBATION METHODS
In Honor Of
Professor Ali Nayfeh

Organizer: D. Mook
Session W4G. 3:40 PM - 5:30 PM
Room: Front Auditorium, DBH&CC
Co-Chairs: F. Vestroni and E. Abed

1. A Comparison of Neural-Network and Fuzzy-Logic Approaches for Seismic Response Reduction, E. E. Matheu, D. L. Liut, D. T. Mook and M. P. Singh

2. The Impact of Power System Controllers on its Nonlinear Dynamics, A. M. A. Hamdan
3. Nonlinear-Based Vibration Control for Distributed-Parameter Systems: A Perturbation Approach, W. Lacarbonara, R. R. Soper and C-M. Chin
4. On Nonlinear Vibrations of a Non Ideal Flexible Slewing Structure, J. M. Balthazar, A. Fenili, D. T. Mook and H. I. Weber
5. Linear and Non-Linear Vibrations of Axially Moving Beams, H. R. Oz, M. Pakdemirli and E. Ozkaya

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RECENT ADVANCES
IN EXPERIMENTAL MECHANICS
In Honor Of
Professor Daniel Post

Organizers: B. Han and P. Ifju
Session W4I. 3:40 PM - 5:30 PM
Room: Conf. Room F, DBH&CC
Co-Chairs: Y.Y. Hung and D. Goldar

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1. Multiplication and Extraction of RGB Photoelastic Fringes, E. Umezaki and Y. Nanka
2. Electronic Speckle Pattern Interferometry (ESPI) for Measurement of Displacement at Hostile Environment in Real Time, M. Aslan and B. R. Tittmann
3. Influence of Crack Nucleation and Propagation on Piezoelectricity of PZT, Kensuke Kageyama and Hiroshi Kato
4. Digital Speckle Correlation Method and its Applications in Electronic Packaging, Xiantao Yan
5. Initiation and Growth of Wrinkling Due to Non-Uniform Stretch in Sheet Forming, Ming Li

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MODERN TRENDS IN THE FOUNDATION OF
THE THEORY OF SHELLS AND PLATES
In Honor of
Professor Daniel Frederick

Organizer: L. Librescu
Session W4J. 3:40 PM - 5:30 PM
Room: 345 Squires
Co-Chairs: G.J. Simitses and A. Tessler

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1. Similarity Conditions for Cylindrical and Flat Sandwich Panels, George J. Simitses, Guanggtian Song and Victor Birman
2. A Higher-Order Theory Accounting for Through-Thickness Thermoelastic Deformations in Thick Composite and Sandwich Plates, A. Tessler, M. S. Annett and G. Gendron
3. An Energetic Homogenization Procedure for the Elastic Properties of Various Sandwich Core Types, J. Hohe and W. Becker
4. Efficiency and Accuracy Considerations in a Unified Plate Theory, Todd O. Williams
5. Implications of Material Anisotropy of Face-Sheets on Thermomechanical Load Carrying Capacity of Sandwich Curved Panels, Liviu Librescu and Terry Hause

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ON EXPERIMENTAL INVESTIGATION OF
THE BEHAVIOR OF MATERIALS
AT HIGH STRAIN RATES
"KOLSKY BAR FIFTY YEARS LATER"
In Memory of
the late Professor H. Kolsky

Organizers: R.J. Clifton and J.R. Klepaczko
Session W4K. 3:40 pm - 5:52 PM
Room: 234 Squires
Co-Chairs: "Rusty" Gray & T. Yokoyama

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1. Hopkinson's Bar Development of the Service of Citizen's Safety in case of Severe Accidents, C.Albertini, K.Labibes, M.Montagnani and G.Solomos
2. A New Testing Method Based on Sensing Block Device, Covering a Wide Range of Strain Rates, S.Tanimura and K.Mimura.
3. Impact Compression Tests of Rolled Hardened Steel and Titanium Alloy, G.Stepanov, V.Zukov and S.Bolvanovich
4. Nonlinear Inverse Design and Optimization of Impact Pistons Based on Wave Mechanics, Liu Deshun, Chen Anhua and Li Xibing
5. Applications of the Torsional Kolsky Bar to Studies of Liquids, Powders and Amorphous Solids, K. T. Ramesh
6. Behaviour of BCC Metals over a Wide Range of Temperatures and Strain-Rates: Experimental Results and Modeling, Akhtar S. Khan and Riqiang Liang