

Contents

VOLUME 1

ICES'95 General Lectures	1
Can and Should the Force Method be Revisited? Gallagher, R.	2
Error estimation and adaptivity: Achievements of the last decade Zienkiewicz, O.C. and Zhu, J.Z.	8
 Object-Oriented Approaches in Computational Mechanics	14
Object-Oriented Computer Aided Software Engineering for Development of Finite Element Analysis Programs Kawai, H.; Yagawa, G. and Yoshimura, S.	15
Symbolic Object-Oriented Finite Element Programming Application to Incompressible Viscous Flow Zimmermann, T. and Eyheramendy, D.	21
Object-Based Numerical Wind Tunnel System with Integrated Support Environments Hatakeyama, M.; Akita, K.; Hasegawa, Y.; Takimoto, N. and Watanabe, M.	27
Nonlinear Finite Element Analysis Using Object-Oriented Approach Maeda, S.; Tokunaga, Y. and Takeda, H.	33
Object-Oriented System for Evaluation of Fracture Mechanics Parameters of Linear and Nonlinear 3D Cracks Kawate, H.; Yoshimura, S.; Yagawa, G. and Kawai, H.	39
Integrated Structural Engineering based on Object-Oriented Product Models Meißner, U.; Ruppel, U. and Peters, F.	45
A Multi-Algorithmic Class Structure for Finite Element Modeling Rucki, M.D. and Miller, G.R.	51
An Agent Oriented Computing Model -Concept Design, Realization, and Applications to Computational Mechanics - Hatakeyama, M.; Kaneko, I.; Uehara, H.; Naoi, M. and Takimoto, N.	57
Object-Based Management System for Computational Mechanics Software Miura, Y.; Akahoshi, Y.; Harada, S.; Kanto, Y. and Aosa, T.	63
 Neural Network / Fuzzy / AI	69
Symbolic Computation of the Transition Matrix for Cylindrical Bending of Plates According to Reissner's Eighth-Order Theory Brunner, W.; Irschik, H. and Schlacher, K.	70
Subjective Evaluations for Handling and Stability of Vehicle Using Hierarchical Neural Networks Matsuda, A.; Yoshimura, S.; Yagawa, G. and Hirata, T.	76
Applications of Genetic Algorithms to Structural Design of Composite Materials Okumura, T.; Yokoyama, A. and Maekawa, Z.	82
Barkhausen Noise Tentative Analysis Using Neural Networks Ochiai, T.; Shuto, T.; Hamabe, S.; Yamaguchi, A.; Maeda, N. and Yagawa, G.	88
 Adaptive Methods	93

Adaptive Time Integration Scheme for Heat Transfer Analysis Lee ,S.H.	94
Adaptive Mesh Refinement Using Optimization Technique Kim, H. and Im, S.	103
Adaptive Modelling of Plates in Bending and Shear Wendt, U. and Samuelsson, A..	109
Error Estimation for General Finite Element Eigenvalue Problems Stephen, D.B. and Steven, G.P.	115
Inverse Problems	121
Parameter Identification Using an Evolutionary Algorithm and its performance under Measurement Errors Furukawa, T. and Yagawa, G.	122
Estimation of Parameters for the Temperature Analysis of Concrete by Using 3-D FEM Ogata, H.; Kunitake, M.; Kondo, F. and Nakazawa, T.	128
Parametric Identification of Plane Frames Using Static Strains Liu, P.	134
Identification of Underground Cavity by New Filter Theory Tsunada, T.; Tanaka, M.; Kohno, K.; Seto, H.; Hyodo, K. and Fujimura, N.	140
Contactless Measurement of Stressed Deformed State of Structures Under Diagnosis Kapustyan, V.E. and Kirichenko, A.I.	146
An Inverse Problem in the Dynamics of a HALROP De Divitiis, N.; de Socio, L.; and Mataloni, A.	152
Quantitative Nondestructive Evaluation with Laser Ultrasonics Using Neural Networks and Computational Mechanics Oishi, A.; Yamada, K.; Yoshimura, S. and Yagawa, G.	158
Application of Neural Network to ECT Data Analysis of Steam Generator Tubings Matsumoto, Y.; Badics, Z.; Aoki, K. and Nakayasu, F.	164
On the Inverse Problem in Variational Calculus Shi, Z.; Zhang, Z. and Liang, L.	170
Optimization	176
Domain Optimization Analysis of Continuum Azegami, H.; Shimoda, M. and Wu, Z.C.	177
A Study on the Shape and Topology Optimization of Structures Youn, S.K. and Park, S.	183
Component Mode Synthesis Based Method for Structural Synthesis Hou, G.J. and Maroju, V.	189
Optimum Earthquake-Resistant Design of Truss Structures Considering Configuration and Sizing Variables Ohkubo, S. and Taniwaki, K.	193
A Study on Optimum Structural Design Nakamura, Y.; Miyazaki, Y. and Nagai, T.	199
Synthetic Optimization in Off-line Parameter Design Gao, S. and Budde, L.	205
Discrete Structure Shakedown Design Giambanco, F.; Palizzolo, L. and Cirone, L.	211

The Structural Optimization under Uncertainty Suzuki, K. and Ohtsubo, H.	217
Automotive Applications of Integrated Structural Optimization Nagai, K.; Igarashi, M.; Gea , H.C. and Kikuchi, N.	223
Domain Optimization Analyses of Flow Fields Katamine, E. and Azegami, H.	229
A New Variational Optimum Design Method for Nonlinear Truss Without Behavior Sensitivities Ohkubo, S. and Watada, Y.	235
Form Modeling	241
Sysmesh Automatic 3D Mesh Generator Rassineux, M. and Guichard, T.	242
Sysweld: Welding and Heat Treatment Modelling Tools Pont, D. and Guichard, T.	248
CAE	254
A CAE System for Micromachines Lee, J.S.; Yoshimura, S.; Yagawa, G. and Kawai, H.	255
Development of Finite Element Analysis System for Micro Manipulation Noguchi, H.; Aoki, A.; Miyazaki, H. and Sato, T.	261
A Special FE-code Adjusted to the Design of Arch Dams Linsbauer, H.N. and Promper, R.	267
A Practical Approach to the Application of Boundary Conditions for Large-Scale Finite Element Computations Reich, R.W.; Dias, J.B. and Nakazawa, S.	273
Assessment of Informational Properties of Finite Elements Beltzer, A.I. and Gotlib, V.A.	278
High Speed Constructional of Global Matrix with Non-uniformed Mesh Used Tabulation Technique Takahashi, H.; Nagasawa, S.; Fukuzawa, Y. and Sakuta, H.	284
3D-FE Simulations of Automobile Tires Meschke, G.; Payer, H.J.; Liu, C.H.; Helnwein, P. and Mang, H.A.	290
Numerical Analyses for the Accurate Design of Large Satellite On-Board Antennas Ando, K. and Mitsugi, J.	296
Many-Stroed Buildings and Constructions Oscillation on the Seismic Base with Nonlinear Characteristics under Non-stationary Influence Mardonov, B. and Mohamad, A.W..	302
Numerical Experiments of a Shinkansen Train Running on the Bridge at High Speed Tanabe, M.; Wakui, H.; Matumoto, N. and Sokabe, M.	307
Metric Model of Similarity of Cases for Finite Element Modeling Nagasawa, S.; Takahashi, H.; Fukuzawa, Y. and Sakuta, H.	313
Computer-Aided Designs of Construction Wainscoting Plans P's under, M. and Igante, T.	319
Skeleton Generation in Gray Pictures Using Visual System Kanto, Y. and Yoshihara, Y.	325
Pre Processing / Image Processing	331

The Automatic Generation of Finite Element Models for Different Analysis Levels Ohtsubo, H.; Suzuki, K.; Hiraki, T. and Kawamura, Y.	332
A Simple Method to Generate Nodes for FE Modeling Kanto, Y. and Azim, A.A.	338
Hexahedral Mesh Generation and Its Application to the Analysis of Groundwater Flow and Transport Phenomena in 3D Fractured Rock Taniguchi, T.; Zielke, W.; Behrendt, F. and Kasper, H.	344
Automated Conversion of 2D Triangular Mesh into Quadrilateral Mesh Shimada, K. and Itoh, T.	350
Computational Complexity of the Advancing Front Triangulation Krysl, P.	356
Parallel Computing	362
The Development and Application of Massively Parallel Solid Mechanics Codes McGlaun, M.; Robinson, A. and Peery, J.	363
On Impact-Contact Algorithms for Parallel Distributed Memory Computers Plaskacz, E.J.	369
Dynamic Bending Deformation of A Ski Lying on A Non-linear Foundation Sakata, T. and Sato, H.	375
Parallelisation of a Modal Capacity Method. Nordhues, H.W. and Worner, J.D.	381
Parallel Mesh Generation Using Engineering Workstations Kawamura, Y.; Ohtsubo, H. and Suzuki, K.	387
Parallel Non-linear Analysis of Laminated Rubber Structures Tong, P.; Chang, T. and Chen, P.	393
Parallel Computing Procedures for an Electromagnetic-mechanical Coupled Problem using Workstation Cluster Horie, T. and Kuramae, H.	399
A Parallel-Vector Simplex Algorithm on Distributed-Memory Computers Qin, J.T. and Nguyen, D.T.	405
A Tridiagonal Solver for Massively Parallel Computers Qin, J. and Nguyen, D.T.	411
Parallel Adaptive Finite Element Analysis for Plate Problems Meißner, U.; Lammer, L. and Olden, J.	417
HP / Spectral Finite Elements in Computational Mechanics	423
On the Patch Type finite element method Babuska, I.	424
Optimal finite element approach for elasticity problems on nonsmooth domain in R3 Guo, B.	427
Unstructured hp/Spectral Elements: Connectivity and Optimal Ordering Warburton, T.C.; Sherwin, S. and Karniadakis, G.E.	433
Iterative solution for thin p-version elements Mandel, J.	445
Spectral elements: Adaptivity and applications in fluid dynamics Henderson, R.	451

New Developments in Differential Quadrature Analysis of Structural Components Wang, X.	457
High-Performance Computing in Science and Engineering	463
Parallel Algorithms for the Generalized Stokes Problem Sameh, A. and Sarin, V.	464
Sensitivity Analysis for Postbuckling Response of Composite Panels on Distributed-Memory Computers Watson, B.C. and Noor, A.K.	470
MD Scope - A Visual Computing Environment for Structural Biology Nelson, M.; Humphrey, W.; Kufrin, R.; Gursoy, A.; Dalke, A.; Kale, L.; Skeel, R. and Schulter, K.	476
3D Simulation of Flow Problems with Parallel Finite Element Computations on the Cray T3D Tezduyar, T.E.; Aliabadi, S.; Behr, M. Johnson, A.; Kalvo, V. and Waters, C.	482
Supercomputing in Multidisciplinary Analysis and Design	488
Variable-Complexity Multidisciplinary Design Optimization Using Parallel Computers Giunta, A.A.; Balabanov, V.; Burgee, S.; Grossman, B.; Haftka, R.T.; Mason, W.H. and Watson, L.T.	489
An Application of Artificial Intelligence for Computer-Aided Design and Manufacturing Marx, W.J.; Schrage, D.P. and Mavris, D.N.	495
Shape and Topology Optimization of Structures Ramm, E.; Maute, K. and Reitinger, R.	501
Heat and Mass Transfer	507
A Godunov-type Numerical Scheme for Hyperbolic Heat Conduction Yeung, W.K. and Lam, T.T.	508
Numerical Modeling of Bridgman Growth in Space with Mephisto Yao, M.; Raman, R. and de Groh III, H.C.	514
Turbulence Driven Convective Heat Transfer in a Direct Injection Diesel Engine Cheung, C.S.; Leung, C.W. and Leung, T.P.	520
Modeling of Collisional Energy Transfer for DSMC Analysis of Non-Equilibrium Effects in a Hypersonic Rarefied Flow Huang Lin; Ren Bing and Shi Yu-zhong	526
Effectiveness of Thermal Spreaders with Convective and Radiation Cooling Lam, T.T.; Fischer, W.D. and Bello, M.	531
Determination of Contact Conductance Across Bare Bolted Joints Using Interface Pressure Distributions Welch, J.W. and Hamada, B.T.	537
Real Time Control of a Shuttle Phase Change Material Experiment Using Flight Correlated Algorithms Glaister, D.S.; Bell, K.D.; Hernandez, D.J.; Bello, M.J. and Stoyanof, M.	543
Computational Mechanics in Electric Devices/ Components	549
Effect of Various Parameters on Flow and Temperature Fields during CZ Growth of Oxide Single Crystals Okano, Y.; Hirata, A.; Nishizawa, S.; Tsukada, T.; Hozawa, M. and Imaishi, N.	550

Finite Element Analysis of Thermal and Stress Fields during Directional Solidification of Cadmium Telluride Lee, T.; Moosbrugger, J.C.; Carlson, F.M. and Larson, D.J., Jr.	556
Inelastic Slip-Dislocation Density Constitutive Model for CdTe Single Crystals Moosbrugger, J.C.; Horton, M.R. and Stevens, T.E.	562
Dislocation Density Analysis for Growth Processes of Single Crystals Tsai, C.T.	568
Modelling of the Coupled Electromagnetic-Thermomechanical Problem and Its Application to Heat Treatment Stok, B.; Mole, N. and Pokorn, M.	574
3-D Eddy Current Analysis by the Edge Elements Kanayama, H.; Ikeguchi, S. and Kikuchi, F.	580
Finite Element Analyses of Cracking in Lithium Niobate Single Crystal Miyazaki, N.; Uchida, H. and Hattori, A.	586
Simulation of CVD Step Coverage for SiH ₄ using Parallel Processing DSMC Method Tatsuta, S.; Sato, Y. and Tamaoki, N.	592
Simulation of the Growth of Diamond Nuclei on Silicon Substrate Kayaba, T.; Saka, M. and Abe, H.	598
Atomic Simulation on Cavity Nucleation at Intersection between Surface and Grain Boundary in High Temperature Environment Kitamura, T.; Ohtani, R. and Yashiro, K.	604
Simulation of Thermally Shunted Multiple-Emitter-Finger AlGaAs/GaAs Heterojunction Bipolar Transistors Using A Finite Element Code Kokkalera, S.; Tsai, C.T.; Liou, L.L.; Barrette, J.; Bozada, C.; Dettmer, R.; Fitch, B.; Mack, M. and Sewell, J.	610
Damage Analysis of Semiconductor Chip during Wire Bonding Process Ikeda, T.; Miyazaki, N.; Kudo, K. and Munakata, T.	616
Flying and Adhesion Phenomena of Submicron Particles in a Low Pressure Semiconductor Manufacturing Apparatus Ishikawa, H. and Koton, S.	622
Fatigue Life Prediction of BGA Solder Joints of under Thermal Cyclic Loads Ebihara, Y.; Nakane, K. and Cai, S.	628
Delamination Growth and Thermal Stress Analysis of Adhesive Butt Joints by Finite Element Method Nakagawa, F.; Sawa, T.; Nakano, Y. and Katsuo, M.	634
Transient Thermal Stress Analysis of Butt Adhesive Joints Subjected to Heat Radiation at Side Surfaces of the Adhesive. Katsuo, M.; Nakano, Y.; Sawa , T. and Kawawaki, M.	640
Advance Computational Methods	646
Numerical Solutions of Mixed Mode Dynamic Fracture in Concrete using Element-Free Galerkin Methods Belytschko, T.; Organ, D. and Tabbara, M.	647
A Combined Periodic-Shooting, Auto-Pilot Technique for Rotorcraft Analysis Peters, D.A. and Li, S.	654
A New Approach for Solving Fourth-Order Equations by the Differential Quadrature Method Chen, W.L.; Striz, A.G. and Bert, C.W.	660
On Rothe and Rothe-Galerkin Method for Differential-Operator Equation Zarubin, A.G.	666

Regularity Between Orthonormal Wavelet Transform of Output Signal and Input Signal or Transmitting System Sone, A.; Yamamoto, S.; Masuda, A.; Nakaoka, A. and Ashino, R.	672
A Simple Method for the Analysis of Correctness of FEM Formulations Gilewski, W.	678
A Recursive Method of Progressive Construction of Inverse Matrix in FEM Vinogradov, O.	684
Consistent Infinitesimal Finite-Element Cell Method: Three-Dimensional Case Wolf, J.P. and Song, C.	690
A Concept of Edge Finite Element Method (EFEM) and Its Application to Experimental Data Interpretation in Mechanics (TEDI) Karmowski, W.	696
A Technique for Coupling Plate and Solid Elements Alesi, H.; Jones, R. and Mileshkin, N.	702
Incomplete Discrete Wavelet Transform and its Application to a Poisson Equation Solver Tanaka, N. and Terasaka, H.	708
Semiclassical Gravity and Large-Scale Structure Bertoni, C.; Carretti, E.; Finelli, F. and Messina, A.	714
Utilization of Complex Structure Peculiarities Via Finite Element Analysis Vorobiev, Y.; S. Shepel, A.I.; and Kanilo, S.P.	723
Method of Line Analysis of Moderate Thick Plate Bending Problems Based on Hu-Reissner's Theory Tang, S.G. and Jiang, L.P.	728
The Analysis of Large Deflection of Plates and Shells Using Weighted Residual Method of Lines Jiang, L.P. and Tang, S.G.	734
Environmental Problems	739
Variational data assimilation, optimal parameter estimation and sensitivity analysis for environmental problems Navon, I.M.	740
Mathematical Modelling and risk assessment in atmospheric pollution problems Nihoul, J. and Ronday, F.	746
Conjugate Gradient-like methods for the Numerical Solution of the Two Site Model in Sorbing Porous Media Gambolati, G.; Pini, G. and Putti, M.	748
Study on the PO River Delta by Means of Two F.E. Shallow Water Model Pennati, V. and Corti, S.	754
Water Pollution Control in a Local Textile Finishing Processes Factory Chan, T.L. and Cheng, H.H.	760
Environmental Geotechnics	766
Modelling expansive geomaterials Alonso, E.	767
Solution strategies for pollutant transport modelling in geomaterials Schrefler, B.A. and Simoni, L.	773
Effect of Roof Slope and Thickness on the Performance of a Saltstone Vault Yu, A.D.; Lam, P. and Hsu, R.H.	779

Soil behaviour under suction and temperature changes Schrefler, B.A. and Bolzon, G.	785
Moving Boundary Problems in Engineering Science	791
Two Hybrid Spectral Methods for the Analysis of Unsteady Viscous Flows with Oscillating Boundaries Mateescu, D.	792
On Spectral Collocation Methods in Space and Time for Free Boundary Problems Imai, H., Shinohara, Y. and Miyakoda, T.	798
Flows Around a Pitching Wing (Body-Fitted Grid Generation with a Moving Boundary) Kuroda, S. and Ohba, H.	804
Numerical Simulation of the Flow Involving the Free Surface Using the Generalized Coordinate System Sakuragi, T. and Kashimura, N.	810
Algorithms for the Stability and the Oscillations of Viscous Rotating Self-Gravitating Fluids Baranov, A.S.	816
Computation of Unsteady Flows around A 3D Rigid/Flexible Body with the MUSCL Scheme Liu, H. and Kawachi, K.	821
Numerical Simulation of Viscous Flows with Free-Surface around a Ship Model Shiotani, S. and Kodama, Y.	838
Pattern Formation Analysis for Snow Crystal Growing by Boundary Element Method Sugino, R. and Tosaka, N.	844
Modeling and Simulation Using Integrated System of Multi-Mode Mechanics	850
Modeling for Powder Compaction and Flow in the Thermal or Magnetic Fields Aizawa, T.; Tamura, S.; Iwai, T. and Kihara, J.	851
Domain Decomposition in Structure-Acoustic Analysis Sandberg, G.	857
Generalized Variational Formulation and Computer-Aided Simulation of Physical Mechanical Problems Ugodchikov A.G. and Ugodchikov, N.A.	863
Non-linear and Time Depending Soil-Structure Interaction Trauner, L.; Skrabl, S. and Zlender, B.	869
Smart Algorithms in Computational Fluid Dynamics	875
Efficient Time Discretization in Fixed Grid MOC : Modified Characteristic Scheme in Open Channels DelCore, R.C. and McInnis, D.A.	876
An Approach for Solving the Advective and Diffusive Partial Differential Equation Based on Characteristics Method Ghidaoui, M.S. and Jiaquan, D.	882
Analytical Analysis of Linear Discretization Strategies in Unsteady Open Channel Flows Ghidaoui, M.S.; Karney, B. and McInnis, D.	888
A Smart Algorithm of CFD on the Stabilized FDM by Self-Diffusion Aratani, T.	894
Algebraic Pressure Correction Techniques for Predicting Incompressible Fluid Flows Xu, C.; Guo, R.W. and Yeung, W.	900

Calculations on the Unsteady Aerodynamic Forces Surrounding Bodies in Relative Motion Using the Boundary Element Method Kikuchi, K. and Yanagizawa, M.	905
Mesh Generation and Update Strategies for Parallel Computation of 3D Flows Johnson, A. and Tezduyar, T.E.	911
Parallel Finite Element Fluid Analysis on Element-by-Element and Unstructured Multi-Color Basis Okuda, H. and Yagawa, G.	917
Numerical Simulation of Transverse Jet Reacting Flows in Scramjet Combustor Liang, J.H. and Wang, C.Y.	923
Parallel Processing for Solving Toeplitz Linear Systems on a NEC SX-3/44R Supercomputer Li, L. and Nakamura, T.	929
Prediction of Chaos Using Stabilization Principle Zak, M. and Meyers, R.	935
Direct Numerical Simulations of Compressible Turbulence Using Higher Order Method of Lines Nishida, H. and Satofuka, N.	941
Numerical Simulation of Turbulent Gas-Particle Impinging Jets Tchavdarov, B. and Yoshida, H.	947
Turbulence in Automaton Solution of Two-component Flow Matsukuma, Y.; Watanabe, S. and Takahashi, R.	953
A New Approach for Deriving Sufficient Stability Conditions in Pipe Transients with Large Friction Ghidaoui, M.S.	959
Two and Three Dimensional Wave Interactions in Wake Flows Morgan, M. and Scirtino, G.	965
Physical Component BFC Method: Numerical Technique Using Differential Geometry Takizawa, A. and Kondo, S.	971
Simulation of Overflow-induced Sloshing in Elastic-wall Vessel Using Physical Component BFC Method Lu, D.; Takizawa, A. and Kondo, S.	977
Modelling of Turbulent Flow in an IC-Engine Configuration Ericsson, M. and Fuchs, L.	983
Petrov-Galerkin Finite Element Approach for the Conservative Navier-Stokes Equations Kakuda, K.; Tosaka, N. and Hughes, T.	989
Finite Element Simulation for Flow around a Structure Kawahara, Y.; Kakuda, K. and Tosaka, N.	995
Numerical Simulation of a Class of Multipolar Viscous Fluids Manouzi, H.	1001
Identification of the Friction Coefficient in Shallow Water Flows Idrissi, M. and Soulaimani, A.	1007
Solution of Navier-Stokes Equations for Flow within Vectoring Nozzles Shen, H.; Ji, M. and Ji, S.	1011
CIP-Towards an Ultimate Goal to an Universal Solver for Gas, Liquid and Solid Yabe, T.	1017
Fast Algorithm for Moving-Adaptive-Grid Generation in One- and Multiple-Dimensions Ida, M. and Yabe, T.	1023
CIP Advection on Triangular Mesh Aoki, T.	1029

Differential Algebraic Hydrodynamics Solver with Cubic-Polynomial Interpolation -two dimensional formulation Utsumi, T.	1035
Numerical Simulation on Unsteady Density Flows with Free Surfaces Takemoto, Y. and Torii, K.	1041
Vibrational Response vs. Change of Trailing Sweep Angle, Tip Angle and Wing's Thickness of a Small Wing Under Aerodynamic and Aeroelastic Forces in Super Sonic Range Kargarnovin, M.H. and Sayrafie, M.H.	1047
Numerical Calculation of Three-Dimensional Hypersonic JET Interaction Flowfields Li, H. and Wang, C.Y.	1053
Numerical Study of Self-Excited Oscillation of Supersonic Jet Impinging on Plate Sakakibara, Y. and Iwamoto, J.	1059
Nonlocal Artificial Boundary Conditions for Computation of External Viscous Flows Tsynkov, S.V.	1065
Adaptive Solution of Transonic Flows Ekstrand, P. and Fuchs, L.	1071
Computational Analysis of Thermophoretic Flow Over Cold Inclined Plates: Effect of Variable Properties Srikanth, R. and Jayaraj, S.	1077
Shock-Fitting for Sonic Boom Calculations Guo, W.H. and Hafez, M.M.	1090
Automaton Solution of Shock Tube Problem Saito, Y.; Matsukuma, Y. and Takahashi, R.	1096
Application of Boundary Condition at Junction to Nozzle for Pulsatile Flow through Pipe Endo, M. and Iwamoto, J.	1102
The Negative Impingement Pressure Nozzle Phenomenon Akin, J.E.; Smith, S.K. and Dove, R.N.	1108
Numerical Simulation of Impingement Air Cooling from LSI Packages with Plate Fins by the Penalty Finite Element Method Tanaka, T.; Matsushima, H.; Ueki, A. and Atarashi, T.	1114
Inelastic Deformation, Damage and Life Analysis	
Obstacles to high temperature Cyclic structural durability of continuous-fiber MMCs Halford, G.	1128
Disturbed state modelling of materials and interfaces, and computer implementation Desai, C.S. and Basaran, C.	1134
A damage mechanics approach to life prediction for a salt structure Chan, K.S.; Devries, K.L.; Bodner, S.R.; Fossum, A.F. and Munson, D.E.	1140
A multiaxial fatigue theory including mean stress and ratcheting effect Ellyin, F.; Xia, Z. and Kujawski, D.	1146
A probabilistic formulation for creep-fatigue failure analysis Harlow, D.G. and Delph, T.J.	1152
Sensitivity Studies in Ratchetting Using Finite Element Models Manning, A.S.; Harvey, S.J. and Harrison, C.	1158
Application of continuum damage mechanics to fracture analysis and its related problems Murakami, S. and Liu, Y.	1164
Higher Order Gradients in Adiabatic Shear Banding Aifantis, E.	1170

Illustrations of Constitutive-Damage Modeling of dynamic fracture of plates and tension bars Eftis, J. and Nemes, J.	1176
On the effective yield surface of a Simple Polycrystal Povirk, G.L. and Onat, E.T.	1182
Extension of the flow rule in Plastic Constitutive Equation Hashiguchi, K.	1188
Inelastic behavior modeling of block medium at the different scale levels Nazarova, L.	1194
Comparison of Beam and Plane Stress Theories for Inelastic Structures Adam, C. and Brunner, W.	1199
Finite element analysis of damage and elasto-plastic behavior of metal matrix composites Voyadjis, G.Z. and Park, T.	1205
Influence of temperature and environment on the mechanical behavior of fibre reinforced Ceramic composites Kussmaul, K.; Maile, K. and Kuhne, J.	1211
Inelastic behavior of CFRP subjected to cyclic loading Ishikawa, H. and Sasaki, K.	1217
Models for predicting damage evolution in metal matrix composites Subjected to Cyclic Loading Allen, D.H.; Hurtado, L.D.; Helms, K. and Lagoudas, D.C.	1223
Modeling of creep and tensile behavior at high homologous temperature using the viscoplasticity theory based on overstress (VBO) Tachibana, Y. and Krempel, E.G.	1229
Flexural vibrations of viscoplastic composite beams Adam, C. and Ziegler, F.	1235
Large deformation of axisymmetric viscoplastic shells Sansour, C. and Kollmann, F.G.	1241
Identification of viscoplastic constitutive equations by inverse methods Lovato, G.; Moret, F.; Cailletaud , G. and Pilvin, P.	1247
Application of viscoplastic theory to high temperature design of fast breeder reactor components Chellapandi, P.; Chetal, S.C. and Bhoje, S.B.	1253
Viscoplastic Adaptation with regard to Discontinuous Bifurcation Münz, T.; Bakherebah, S. and Willam, K.	1259
Evaluation of nonlinear structural dynamic responses using a fast-running spring-mass formulation Benjami, A.S.; Altman, B.S. and Gruda, J.D.	1265
The effect of resisting media and other rotating-beam parameter changes on the fundamental frequency of bending vibrations Sahu, A.	1274
Experimental and numerical simulations of buckling problems in lightweight structures Limam, A.; Alexis, D. and Jullien, J.F.	1279
Large displacement structural durability analysis of simple bend specimen emulating rocket nozzle liners Arya, V.K. and Halford, G.	1285
Three-Dimensional Elastoplastic Finite-Element Analysis and Strength Evaluation of Link Chains in Chain Hoists Subjected to Combined Loads of Tensile Loads and Bending Moments Hiroshima , T. and Sawa, T.	1292
Numerical Techniques in the Application of the Method of Arbitrary Lines to Elastic-plastic Analysis Kaminishi, K. and Miyoshi, T.	1298

A constitutive model for the analysis of deformation in low strain rate Radhakrishnan, V.M.	1304
The evolution of damage in prenotched steel specimens deformed at high strain rates Cao, Y.H. and Batra, R.C.	1310
Calculation of elasto-plastic notch tip strains and stresses under non-proportional multiaxial loading Singh, M.N.; Moftakhar, A. and Glinka, G.	1316
Effect of Aspect Ratio and Strain Hardening on Void Growth: Proportional Loading at Low to Moderate Triaxiality Mazataud, P. and McDowell, D.	1324
Determination of damage parameters for microcrack formation: Measurement and application in lifetime prediction models Stamm, H.; Hähner, P. and Schwertel, J.	1330
Deformation Instabilities at Finite Inelastic Strains Stein, E. and Steinmann, P.	1336
On the Propagation of a Shear Band in a Thick-Wall RHA Steel Tube Peng, Z and Batra, R.C.	1342
Creep damage in type 316 stainless steel and its correlation with rupture properties Mathew, M.D.; Sasikala, G.; Mannan, S.L. and Rodriguez, P.	1347
Stick-Slip Instabilities in Fracture Webb, T.W. and Aifantis, E.	1353
Temperature dependent cyclic deformation mechanisms in HAYNES 188 superalloy Rao, K.B.; Castelli, M.G.; Allen, G.P. and Ellis, J.R.	1359
Deformation behaviour of a single crystal superalloy SC16 at elevated temperatures: Experimental observations and modelling Gabrisch, H.; Kuttner, T. and Wahi, R.P.	1365
Additional Cyclic Hardening of metals under Tension-Torsion and triaxial tension-compression Loadings Calloch, S. and Marquis, D.	1371
Assessment of microstructural degradation in metallic materials by acoustic and magnetic methods Jayakumar, T.; Raj, B. and Rodriguez, P.	1377
Forming Simulation and Instability Prediction	1383
Simulations of Sheet Metal Forming Operations by Considering Plastic Anisotropic Behavior of Sheet Metal Chou, C.H.; Pan, J. and Tang, S.C.	1384
The Element Bending Group Method Wagoner, R.H.; Zhou, D. and Sriram, S.	1390
Comparison between Numerical and Analytical Predictions of Shear Localization of Sheets Subject to Biaxial Tension Goya, M.; Miyagi, K.; Ito, K.; Sueyoshi, T. and Itomura, S.	1396
F.E.M. Analysis of Shear Localization Using a New Constitutive Equation for Isotropic Porous Materials Sueyoshi, T.; Goya, M.; Miyagi, K. and Itomura, S.	1402
3-D FEM Analysis of Forming Operations for Planar Anisotropic Sheet Panels Keum, Y.T.; Suh, Y.S.; Chung, K. and Wagoner, R.H.	1408
Adaptive Arbitrary Lagrangian-Eulerian Finite Element Model for Metal Forming Problems Raju, S. and Ghosh, S.	1414

Optimum Sheet Forming Process Design by Using FE Analysis and Mathematical Programming Katayama, T.; Nakamachi, E. and T. Nakano,	1420
A Theoretical and Experimental Investigation of Limit Strains in Sheet Metal Forming Zhao, L.; Sowerby, R. and Sklad, M.P.	1426
Dynamic Plastic Instability Prediction of Sheet Stretching by Using Elastic Crystalline Viscoplastic FE Method Nakamachi, E. and Dong, X.	1432
Three-Dimensional Elastic-Plastic FEM Analysis on Rectangular-Section Turbular Forming Jia, Z. and Gunasekera, J.S.	1438
Direct Simulation of Powder Mixing and Refinement Process in the Mechanical Alloying Aizawa, T.; Benson, D. and Kihara, J.	1444
Simulation of Flow Maldistribution and Its Result on Mass-Transfer Sloley, A.W. and Golden, S.W.	1450
Impact and Contact Problems	1456
A Computational and Experimental Comparison of Hypervelocity Impact in Aluminum and Cadmium Whipple Shields Kerr, J.H.; Fahrenhold, E.P.; Christiansen, E.L. and Crews, J.L.	1457
Shock Testing and Response Simulation of Electronic Equipment Trepess, D.H.	1463
Impact Force Prediction for a Hopkinson Bar Using Axisymmetric Solid Elements Kapania, R. and T. Stoumbos, T.	1469
Evaluation of Construction Elements State Under Explosive Loading Vorobiev, Y.S.; Kolodyazhnyi, A.V. and Sevyukov, V.I.	1475
Issues and Approaches in 3-D Frictional Contact Analysis Kwak, B.M.	1480
Equivalent Moduli of Sheet Reinforced Soils Tong, P. and Shi, G.	1486
Design of Three Dimensional Tactile Sensor Applying Optical Waveguide Plate Based on FEM Contact Analysis and Implementation of Robotic Tactile Sensing System Using Image Data Processing Technique Ohka, M.; Mitsuya, Y.; Takeuchi, S. and Kamekawa, O.	1492
Computing Methods for Contact Problems in Structural Mechanics Ecker, H. and Steinschaden, N.	1498
Solving Elastic Contact Problems with Friction as Linear Complementarity Problems Based on Incremental Variational Principles Yu, H. and Zhu, D.	1504
Stability and Bifurcation	1510
Second-Order A-Priori Estimates of Bifurcation Points on Geometrically Nonlinear Prebuckling Plates Mang, H.A. and Helnwein, P.	1511
Suppressing Singularities when Computing Critical Points Using Multigrid Methods Ronnau, A. and Parsons, I.D.	1517
Computational Stability Theory - Its Strategy Fujii, F.; Okazawa, S. and Gong, S-X	1523
A Study on Robust Structures under Consideration of Dynamic and Buckling Hiroyasu, T. and Yamakawa, H.	1529

On the Coupling of Analytical and Numerical Methods for the Solution of Weakly Nonlinear Chaotic Dynamical Systems Mastroddi, F. G.; Ceccarelli, G. and Morino, L.	1535
Governing Equations for the Dynamic Stability of Thin Shells Subjected to Follower Forces and some Numerical Results Fukuchi, N. and George, T.	1541
Threshold Curves of Quantitative Dynamic Stability of Thin Shells subjected to Follower Forces George, T. and Fukuchi, N.	1547
Delamination Buckling of Laminated Composite Structures with Curvature Kim, Y. and Im, S.	1553
Elasto-Plastic Analysis of Steel Columns under Uniaxial Cyclic Loading Using Minimum Residual Displacement Method Ishikawa, T. and Yoda, T.	1559
On Elasto-Plastic Buckling Analysis of Cylindrical Shells Damjanic, F.B.; Brank, B. and Peric, D.	1565

Author Index

VOLUME 2

New Developments in Finite Element	1571
Some remarks on Free Mesh Method: A Kind of Meshless Finite Element Method Yagawa, G.; Yamada, T. and Kawai	1572
Assumed Stress Function Finite Element Method: Towards Unification Barakrishna, C.; Kane, J.H. and Gallagher, R.H.	1578
Continuum-based Shell Elements for Nonlinear Applications Parisch, H.	1584
Assumed Stress Stabilization Vectors for 9-node Shell Element Sze, K.Y.	1590
A B-spline Field Approximation Model for Shells Varmaelen, A.H. and Heppler, G.R.	1596
Quadrilateral Mindlin Plate Bending Element Using Continuous Shear Constraint Kondoh, K. and Hanai, M.	1602
A Locking-free Mixed Triangular Element for the Reissner-Mindlin Plates Kikuchi, F. and Ishii, K.	1608
The Modify Variational Method of Calculation of Turbomachines Blading Vibrations Vorobiev, Y.S. and Korsunskiy, M.L.	1614
Investigation and Improvement of Rational Displacement Fields of Incompatible Element Jiao, Z.P.; Sheng, Y. and Wu, C.C.	1620
Shear Locking in B-spline Based Finite Element Formulations Varmaelen, A.H. and Heppler, G.R.	1626
Patch Test Oriented Analytical Element Formulations Zirwas, G. and Cornu, C.	1632
Global/Local Analysis of Stepped Plates with Cutouts Haryadi, S.G.; Kapania, R.K. and Haftka, R.T.	1638