

# **Seventh U.S. National Congress on Computational Mechanics**

**USNCCM7**

**July 27 – 31, 2003  
Albuquerque, New Mexico**

**U.S. Association for  
Computational Mechanics**



## **Congress Chairs**

Thomas Bickel, Sandia National Laboratories  
Jacob Fish, Rensselaer Polytechnic Institute

## **Technical Program Chairs**

Mark Christon, Sandia National Laboratories  
Robert Haber, University of Illinois at Urbana-Champaign

## **Local Organizing Committee**

Ben Anello, System Administration  
Mitzie Bower, Web Page Design/Graphics  
Tammy Eldred, Conference Coordinator  
Dave Gartling, Fellowship Program  
Russ Goebel, Sponsor/Vendor Exhibits  
Sandy Pino, Logistics & Social Program  
Tom Voth, Vendor Exhibits  
Dominique Foley-Wilson, Student Events, Funding  
John Zepper, Vendors, Computer Support

## **Scientific Program Committee**

### **Member**

Ivo Babuska  
Douglas Bammann  
Martin Bendsoe  
David Benson  
Ted Belytschko  
René de Borst  
J.S. Chen  
Kyeongjae Cho  
Bernardo Cockburn  
Mark Cross  
Paul Dawson  
Rene De Borst  
Leszek Demkowicz  
Charbel Farhat  
Lisa Fauci  
Jacob Fish  
Joe Flaherty  
David Gartling  
Wagdi Habashi  
Isaac Harari  
Ismael Herrera  
Thomas J.R. Hughes  
Gregory Hulbert  
Mac Hyman  
Sergio Idelsohn  
Ken Jansen  
David Keyes  
Michael Kleiber  
Pierre Ladeveze  
Tod A. Laursen  
Wing Kam Liu  
Herbert Mang  
Arif Masud  
Bob Moser  
Alan Needleman  
Tinsley Oden  
Eugenio Oñate  
Marie Oshima  
Paulo Pimenta  
Peter Pinsky  
Ekkehard Ramm  
Benard A. Schrefler  
Mark Shephard  
Stein Sture  
Robert L. Taylor  
Tayfun Tezduyar  
Tim Trucano  
Mary Wheeler  
Peter Wriggers  
Genki Yagawa  
Mingwu Yuan

### **Affiliation**

University of Texas, Austin  
Sandia National Laboratories  
Technical University of Denmark, Denmark  
University of California, San Diego  
Northwestern University  
Delft University of Technology, Netherlands  
University of California, Los Angeles  
Stanford University  
University of Minnesota  
University of Greenwich, UK  
Cornell University  
Delft Technical University  
University of Texas, Austin  
University of Colorado, Boulder  
Tulane University  
Rensselaer Polytechnic Institute  
Rensselaer Polytechnic Institute  
Sandia National Laboratories  
McGill University, Canada  
Tel Aviv University, Israel  
Universidad Nacional Autonoma de Mexico  
University of Texas, Austin  
University of Michigan  
Los Alamos National Laboratories  
Centro Internacional de Metodos Computacionales en Ingenieria  
Rensselaer Polytechnic Institute  
Old Dominion University  
Polish Academy of Science, Poland  
l'École Normale Supérieure de Cachan  
Duke University  
Northwestern University  
Technische Universitat Wien, Austria  
University of Illinois, Chicago  
University of Illinois, Urbana-Champaign  
Brown University  
University of Texas, Austin  
Universidad Politécnica de Cataluna, Spain  
University of Tokyo, Japan  
University of Sao Paulo, Brazil  
Stanford University  
University of Stuttgart, Germany  
University of Padua, Italy  
Rensselaer Polytechnic Institute  
University of Colorado, Boulder  
University of California, Berkeley (emeritus)  
Rice University  
Sandia National Laboratories  
University of Texas, Austin  
University of Hannover, Germany  
University of Tokyo, Japan  
Beijing University, China

## INTRODUCTION TO THE TECHNICAL PROGRAM

WELCOME TO THE SEVENTH U.S. NATIONAL CONGRESS ON COMPUTATIONAL MECHANICS (USNCCM7). THE USNCCM7 IS THE OFFICIAL BIENNIAL CONGRESS OF THE U.S. ASSOCIATION FOR COMPUTATIONAL MECHANICS (USACM), AN AFFILIATE OF THE INTERNATIONAL ASSOCIATION FOR COMPUTATIONAL MECHANICS. SINCE THEIR INCEPTION IN 1991, THE BIENNIAL CONGRESSES OF THE USACM HAVE ESTABLISHED THEMSELVES AS MAJOR INTERNATIONAL SCIENTIFIC EVENTS, DRAWING COMPUTATIONAL SCIENTISTS AND ENGINEERS WORLDWIDE FROM GOVERNMENT, ACADEMIA AND INDUSTRY. THE USNCCM7 EXPANDS THIS INTERNATIONAL TRADITION WITH GREATER REPRESENTATION OF INTERNATIONAL SCIENTISTS ON THE SCIENTIFIC PROGRAM COMMITTEE AND WITH PARTICIPANTS FROM MORE THAN THIRTY-NINE COUNTRIES.

THE TECHNICAL PROGRAM REFLECTS THE BREADTH, DEPTH AND VITALITY OF CONTEMPORARY COMPUTATIONAL MECHANICS, WITH 9 PLENARY LECTURES AND ROUGHLY 980 PRESENTATIONS IN 62 MINISYMPOSIA. THE PROGRAM HIGHLIGHTS EMERGING APPLICATIONS, SUCH AS MULTI-SCALE MODELING, BIOMECHANICS AND NANOTECHNOLOGY, AND FEATURES THE LATEST DEVELOPMENTS IN NUMERICAL METHODS, MATHEMATICAL ANALYSIS AND LARGE-SCALE COMPUTING.

INCREASED PARTICIPATION BY SCIENTISTS FROM SANDIA NATIONAL LABORATORIES, OUR HOST INSTITUTION, AND THE OTHER U.S. NATIONAL LABORATORIES IS ANOTHER STRIKING FEATURE OF THIS YEAR'S TECHNICAL PROGRAM. THE U.S. NATIONAL LABORATORIES ARE CENTERS OF EXCELLENCE IN THE OVERALL U.S. PROGRAM IN COMPUTATIONAL SCIENCE; WE HOPE THAT THEIR ACTIVE PARTICIPATION IN USNCCM7 WILL GENERATE NEW AND FRUITFUL INTERACTIONS WITH THE REST OF THE COMPUTATIONALMECHANICS COMMUNITY.

THE WORLD-WIDE WEB AND ELECTRONIC MEDIA PLAYED A HEIGHTENED ROLE IN THE PLANNING AND DEVELOPMENT OF USNCCM7. ALL OF THE MINISYMPOSIUM PROPOSALS AND TECHNICAL ABSTRACTS WERE SUBMITTED THROUGH THE CONGRESS WEB SITE AND WERE REVIEWED AND PROCESSED ON-LINE BY THE MINISYMPOSIUM ORGANIZERS AND BY THE CO-CHAIRS OF THE TECHNICAL PROGRAM. THIS YEAR, THE CONGRESS PROCEEDINGS ARE PUBLISHED IN CD FORMAT FOR THE FIRST TIME. SPECIAL THANKS ARE DUE TO BOB HARRINGTON OF TECHCOACH, INC. AND TO TAMMY ELDRED FOR DEVELOPING THE SOFTWARE THAT MADE THIS POSSIBLE.

WE WISH TO THANK THE MEMBERS OF THE SCIENTIFIC PROGRAM COMMITTEE AND THE MINISYMPOSIUM ORGANIZERS FOR DEVELOPING WHAT WE BELIEVE TO BE AN OUTSTANDING TECHNICAL PROGRAM. WE ALSO THANK THE LOCAL ORGANIZING COMMITTEE AND ESPECIALLY THE CONGRESS COORDINATORS, TAMMY ELDRED AND SANDY PINO, FOR THEIR UNTIRING EFFORTS IN SUPPORT OF THE CONGRESS. FINALLY, WE THANK THE CONGRESS CO-CHAIRS, TOM BICKEL AND JACOB FISH, AND THE MEMBERS OF THE USACM EXECUTIVE COMMITTEE FOR THEIR GENEROUS SUPPORT AND ADVICE.

ONCE AGAIN, WELCOME TO ALBUQUERQUE; WE WISH YOU AN ENJOYABLE AND REWARDING MEETING.

MARK CHRISTON  
COMPUTATIONAL PHYSICS R&D  
SANDIA NATIONAL LABORATORIES  
TECHNICAL PROGRAM CO-CHAIR,  
USNCCM7

ROBERT HABER  
THEORETICAL & APPLIED MECHANICS  
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN  
TECHNICAL PROGRAM CO-CHAIR,  
USNCCM7

PETE V. DOMENICI  
NEW MEXICO

COMMITTEES:  
ENERGY AND NATURAL RESOURCES  
APPROPRIATIONS  
BUDGET  
INDIAN AFFAIRS

United States Senate  
WASHINGTON, DC 20510-3101

July 28, 2003

Dear Friends,

Congratulations on convening the Seventh U.S. National Congress on Computational Mechanics. We are pleased that New Mexico is hosting this prestigious event and welcome you.

Our state shares your interests in applications in nanotechnology, bioengineering, and high performance computing. Our two national laboratories, Sandia and Los Alamos, perform cutting-edge research in these areas.

Best wishes for a successful Congress!

Sincerely,  
  
Pete V. Domenici  
United States Senator

**ALBUQUERQUE OFFICE:**  
ALBUQUERQUE PLAZA  
201 3rd Street NW  
Suite 710  
ALBUQUERQUE, NM 87102  
(505) 346-6791  
FAX: (505) 346-6720

**LAS CRUCES OFFICE:**  
LORETO TOWN CENTER  
509 N. LORETO  
SUITE 118  
LAS CRUCES, NM 88001  
(505) 526-5475  
FAX: (505) 523-4989

**ROSWELL OFFICE:**  
FEDERAL BUILDING  
Route 140  
Roswell, NM 88201  
(505) 623-6170  
(505) 988-6511  
FAX: (505) 625-2547

**SANTA FE OFFICE:**  
120 SOUTH FEDERAL PLACE  
P.O. Box 2021  
Santa Fe, NM 87501  
(505) 988-6511  
FAX: (505) 988-6514

**WASHINGTON, DC OFFICE:**  
SENATE HART OFFICE BUILDING  
Room 2021  
Washington, DC 20510-3101  
(202) 224-6621

<http://domenici.senate.gov>  
PRINTED ON RECYCLED PAPER

JEFF BINGAMAN  
NEW MEXICO

United States Senate

June 17, 2003

New Mexico welcomes the Seventh United States Congress on Computational Mechanics!

As a state that continually promotes technological innovations, we are pleased that you have chosen New Mexico as a platform to discuss the computational innovations of this esteemed international audience.

Enjoy your stay in our Land of Enchantment!

Sincerely,



Jeff Bingaman  
United States Senator

703 HART SENATE OFFICE BUILDING  
WASHINGTON, DC 20510  
(202) 224-3211  
IN NEW MEXICO—1-800-443-8658  
TDD (202) 224-1792

senator\_bingaman@bingaman.senate.gov

HEATHER WILSON  
1ST DISTRICT, NEW MEXICO

ENERGY AND COMMERCE

SUBCOMMITTEES:  
TELECOMMUNICATIONS  
AND THE INTERNET

HEALTH

ENERGY AND AIR QUALITY

ENVIRONMENT AND

HAZARDOUS MATERIALS

HOUSE ARMED SERVICES

SUBCOMMITTEES:  
STRATEGIC FORCES  
READINESS

Congress of the United States

House of Representatives

Washington, DC 20515-3101

July 28, 2003

318 CANNON HOUSE OFFICE BUILDING  
WASHINGTON, DC 20515-3101  
(202) 224-6316  
FAX: (202) 225-4975

20 FIRST PLAZA, NW  
SUITE 603  
ALBUQUERQUE, NM 87102  
(505) 246-6723  
FAX: (505) 246-6723  
<http://www.house.gov/wilson>

Dear Members of the 7<sup>th</sup> U.S. National Congress on Computational Mechanics,

It is with pleasure that I join the citizens of Albuquerque, New Mexico, in welcoming you to the great state of New Mexico.

I am confident that during the upcoming sessions you will be discussing innovations and technologies relevant to the future of our global prosperity and security. I understand that close to one thousand attendees will gather at this conference to review and advance applications in nanotechnology, bioengineering, recent developments in numerical methods and high performance computing. I commend the computational scientists working in tandem with industry, academia, and government to accomplish great things.

Good luck in your endeavor! Enjoy the conference and your stay in New Mexico.

Sincerely,



Heather Wilson

PLEASE REPLY TO:

625 SILVER AVE., SW, SUITE 130  
ALBUQUERQUE, NM 87102  
(505) 346-6601

148 LORETO TOWNE CENTRE  
505 SOUTH MAIN  
LAS VEGAS, NM 89001  
(505) 523-6561

P.O. BOX 1977  
718 BRIDGE STREET, SUITE 3  
LAS VEGAS, NM 87701  
(505) 454-8824

105 WEST THIRD, SUITE 409  
ROSWELL, NM 88201  
(505) 622-7113

119 EAST MARCY, SUITE 101  
SANTA FE, NM 87501  
(505) 988-6647

PRINTED ON RECYCLED PAPER

# Information about the Congress

## ***Registration Desk***

The registration desk is located on the 3<sup>rd</sup> floor of the Albuquerque Convention Center in front of Ballrooms A & B. Registration hours are:

Sunday	6:00 pm – 9:00 pm
Monday	7:00 am – 6:30 pm
Tuesday	7:30 am – Noon
Wednesday	9:00 am – Noon

## ***Registration Fees***

Regular Participant	\$475
Student	\$130

The regular registration fee covers one copy of the proceedings (published as a CD), entrance to the receptions, all breaks, and the banquet, and a 2-year membership in the USACM and IACM. The student registration fee covers the same items, except for the USCAM/IACM memberships.

## ***Registration for Post-Congress Short Courses***

Participants who wish to register on-site for one of the post-congress short courses must do so by 7 pm Monday evening.

## ***Explanation of the Program Format***

The technical program consists of 9 plenary lectures and 62 minisymposia, with approximately 980 presentations in 229 technical sessions. Each day, the morning program begins with a plenary lecture followed by 27 parallel technical sessions. The afternoon program begins with parallel semi-plenary lectures followed by two sets of parallel technical sessions.

## ***Message Board***

Messages can be posted on a bulletin board located on the upper floor of the Convention Center, adjacent to the registration booths and Ballrooms A and B.

## ***Audiovisual Services***

Each meeting room is equipped with an overhead projector and a LCD projector capable of 800 x 600 resolution. Computers are NOT provided by the congress. Additional audiovisual equipment will not be provided unless the congress organizers have approved a previous request.

If you plan to use the LCD projection equipment, we recommend that you confirm the compatibility of your computer with the projector before the start of your session. To keep the meeting on schedule, any time lost debugging audiovisual problems during your presentation will be deducted from your available time. If you encounter problems, please ask any of the audiovisual assistants for help.

## ***Author's Preparation Area***

Presenting authors can test compatibility with the provided audiovisual equipment in the author's preparation area, located in the San Juan room on the bottom level of the Convention Center. Each technical session is preceded by at least a 30-minute break. We recommend that authors also use this time to make a final check of their presentation equipment.

## ***Internet Access***

Internet access is available at the Holmans Cyber Café in Ballroom C of the Albuquerque Convention Center where networked computers are provided for the use of Congress attendees. In addition, wireless network cards are available to connect your portable computer to the internet. Holman's representatives are available to assist you in using this service.

## ***Job Opportunity Boards***

Bulletin boards for posting employment opportunities are located in the vendor area of Ballroom C. Representatives of companies, universities, and laboratories are encouraged to post research and employment opportunities.

## **Special Events and Exhibits**

### **Pre-Congress Short Courses**

Sunday, July 27, Hyatt Hotel

Discontinuous Galerkin Methods

Mesh Generation & Automated Simulation

Validation & Verification in Computational Mechanics

### **Ice Breaker Reception**

Sunday, July 27, 6:30 pm-9:00 pm

Ballrooms A & B, Convention Center

### **Vendor Exhibits**

Monday – Wednesday

Ballroom C, Convention Center

### **Banquet Reception**

Tuesday, July 29, 6:30 –7:00 pm

Hyatt Regency Grand Ballroom

### **Congress Banquet & Awards Ceremony**

Tuesday, July 29, 7:00pm – 9:00 pm

Hyatt Regency Grand Ballroom

### **Post-Congress Short Courses**

Thursday, July 31, Hyatt Hotel

Verification of Computer Codes in Computational  
Science and Engineering

Multiscale Multiphysics Computational Solid Mechanics

## **Plenary Lectures**

### **Plenary Lecture 1: Kiva, Monday, July 28, 8:30 - 9:15 AM**

Simulation-Based Medical Planning for Cardiovascular Disease

*Speaker:* Charles Taylor, Stanford University

*Chair:* Thomas J. R. Hughes, University of Texas, Austin

### **Plenary Lecture 2: Ballroom A, Monday, July 28, 1:00 – 1:45 PM**

Numerical representation of the Large Scales of Turbulence

*Speaker:* Robert Moser, University of Illinois at Urbana-Champaign

*Chair:* Parviz Moin, Stanford University

### **Plenary Lecture 3: Ballroom B, Monday, July 28, 1:00 – 1:45 PM**

Computational Discrete Dislocation Plasticity

*Speaker:* Alan Needleman, Brown University

*Chair:* Paul Dawson, Cornell University

### **Plenary Lecture 4: Kiva, Tuesday, July 29, 8:30 – 9:15 AM**

Investigating Materials Failure Using Lots of Atoms and Big Computers

*Speaker:* Farid Abraham, IBM Almaden Research Center

*Chair:* Jacob Fish, Rensselaer Polytechnic Institute

### **Plenary Lecture 5: Ballroom A, Tuesday, July 29, 1:00 – 1:45 PM**

Scalable Solvers in DOE's SciDAC Initiative

*Speaker:* David Keyes, Old Dominion University

*Chair:* Charbel Farhat, University of Colorado, Boulder

### **Plenary Lecture 6: Ballroom B, Tuesday, July 29, 1:00 – 1:45 PM**

Exact Sequences, de Rham Diagram, Maxwell Equations, hp Adaptivity

*Speaker:* Leszek Demkowicz, The University of Texas at Austin

*Chair:* Barna A. Szabó, Washington University

### **Plenary Lecture 7: Kiva, Wednesday, July 30, 8:30 – 9:15 AM**

Continuum/Discrete Representations of Fracturing Solids

*Speaker:* Roger Owen, University of Wales, Swansea

*Chair:* Robert L. Taylor, University of California, Berkeley (emeritus)

### **Plenary Lecture 8: Ballroom A, Wednesday, July 30, 1:00 – 1:45 PM**

Computational Engineering Sciences in the 21<sup>st</sup> Century

*Speaker:* Thomas Bickel, Sandia National Laboratories

*Chair:* J. Tinsley Oden, University of Texas, Austin

### **Plenary Lecture 9: Ballroom B, Wednesday, July 30, 1:00 – 1:45 PM**

Analysis and Design of Elastodynamic Waveguides and Filters

*Speaker:* Gregory Hulbert, University of Michigan

*Chair:* Ted Belytschko, Northwestern University

We are pleased to acknowledge the financial support of the sponsors of the U.S. National Congress on Computational Mechanics:

### Platinum Sponsorships:



*Sponsoring the Awards Dinner Banquet, Tuesday, July 29*



i n v e n t

*Sponsoring the Organizer's Appreciation Dinner, Monday, July 28  
Sponsoring the themed afternoon break, Tuesday, July 29*

### Silver Sponsorships:



*Sponsoring the Ice Breaker Reception, Sunday, July 27*



*Sponsoring the Cyber Cafe*

### Bronze Sponsorship:



*Sponsoring the themed afternoon break, Monday, July 28*

### Congress Exhibitors:

Ballroom C, Albuquerque Convention Center

ABBA Technologies  
Network Appliance  
Begell House, Inc.  
Brocade Communications  
CEI Computational Engineering International  
Dell Computer  
Elsevier  
Lawrence Livermore National Laboratory  
MSC Software  
Sandia National Laboratories  
SCICORP  
SIAM Society of Industrial and Applied Mathematics  
Springer-Verlag New York, Inc.  
StorageTech  
VA Software  
Wiley & Sons



### Generous Fellowship Contributions Provided By:

Computer Science Research Institute, SNL  
Department of Energy  
Lawrence Livermore National Laboratory  
Los Alamos National Laboratory  
National Science Foundation  
Sandia National Laboratories

# Congress Program

## *Opening Remarks and Welcoming Address*

Kiva Auditorium, Monday, July 28, 8:00 - 8:30 AM

Monday, July 28  
8:30 – 9:15 AM

## Plenary Lecture 1

Kiva Auditorium

### ***Opening Remarks***

Thomas Bickel and Jacob Fish,  
Congress Chairs

Mark Christon and Robert Haber,  
Technical Program Chairs



*Simulation-Based Medical Planning for  
Cardiovascular Disease*

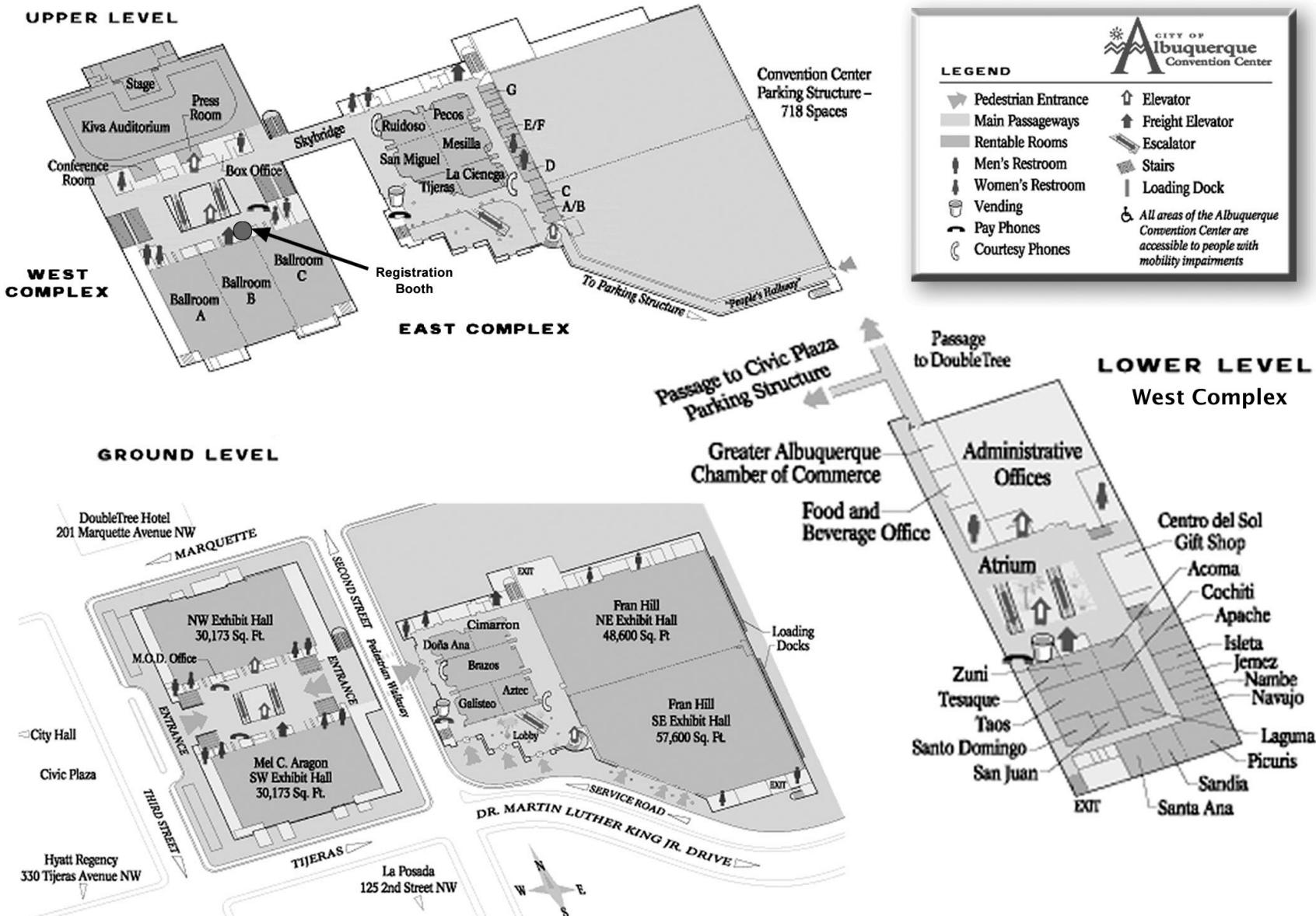
### ***Welcoming Address***

Ambassador C. Paul Robinson,  
President and Laboratory Director  
Sandia National Laboratories  
Welcoming Address

**Charles Taylor**  
**Stanford University**



# Albuquerque Convention Center Map



MONDAY, JULY 28: 9:45 –11:45 AM		
Room	Location	Technical Session Title
Acoma	W. 1 <sup>st</sup> Floor	Computational Simulation of Transport/Reaction Systems: Solution Algorithms and Applications Session I
Apache	W. 1 <sup>st</sup> Floor	Advances in Flow Simulation and Modeling : Session I
Cochiti	W. 1 <sup>st</sup> Floor	Numerical Methods and Modeling in Turbulence Simulation : Session I
Isleta	W. 1 <sup>st</sup> Floor	Computational Micro- and Nano-Fluidics : Session I
Jemez	W. 1 <sup>st</sup> Floor	Computational Methods on Nonmatching and Moving Grids : Session I
Laguna	W. 1 <sup>st</sup> Floor	Incompressible CFD – Innovative Algorithms and Applications : Session I
Nambe'	W. 1 <sup>st</sup> Floor	Advances in Hydrocode Technology : Session I Eulerian/ALE Hydro Methods
Navajo	W. 1 <sup>st</sup> Floor	Computational Biological Fluid Dynamics : Session I
Picuris	W. 1 <sup>st</sup> Floor	Discontinuous Galerkin Methods for Computational Mechanics Session I Hyperbolic and Mixed Problems
Sandia	W. 1 <sup>st</sup> Floor	Physical and Computational Modeling of Biological Tissues : Session I Growth and Remodeling
Santa Ana	W. 1 <sup>st</sup> Floor	Methods and Applications in Coupled Engineering Simulations : Session I
Santo Domingo	W. 1 <sup>st</sup> Floor	p- & hp Finite Elements and Boundary Element Methods : Session I
Taos	W. 1 <sup>st</sup> Floor	Computational Contact Mechanics : Session I
Tesuque	W. 1 <sup>st</sup> Floor	Inverse Problems : Session I
Zuni	W. 1 <sup>st</sup> Floor	Computational Mechanics: From Theory to Practice (A Honorary Minisymposium on the occasion of Ted Belytschko's 60 <sup>th</sup> Birthday) : Session I
La Cienega	E. Upper level	Symposium on Crashworthiness & Impact Engineering : Session I
Mesilla	E. Upper level	Advances in Computational Methods for Reservoir Geomechanics Modeling : Session I
Pecos	E. Upper level	Recent Advances in Functionally Graded Materials : Session I
Ruidoso	E. Upper level	Stochastic Fracture Mechanics : Session I
San Miguel	E. Upper level	Computational Engineering Design Optimization : Session I
Tijeras	E. Upper level	Computational Modeling of Plastic Flow in Small Volumes : Session I
Aztec	E. Lower Level	4 <sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part I : Session I Plenary Session
Cimarron	E. Lower Level	Stability of Thin-Walled Structures : Session I
Dona Ana	E. Lower Level	Multiscale Modeling and Simulation of Material Behavior : Session I
Galisteo	E. Lower Level	
Ballroom A	W. 3 <sup>rd</sup> Floor	Symposium on Meshfree Methods: Part I : Session I Hybrid and Coupled Methods
Ballroom B	W. 3 <sup>rd</sup> Floor	Multiple-scale Analysis of Nanoscale Mechanics and Materials : Session I Multiscale Methods I

MONDAY, JULY 28: 9:45 –11:45 AM				
Time 24 Min. Talks	Room: Acoma <b>Computational Simulation of Transport/Reaction Systems: Solution Algorithms and Applications</b> <b>Session I</b> Session Chairs: Shadid, J., Menon, S.	Room: Apache <b>Advances in Flow Simulation and Modeling</b> <b>Session I</b> Session Chair: Sameh, A.	Room: Cochiti <b>Numerical Methods and Modeling in Turbulence Simulation</b> <b>Session I</b> Session Chairs: Moser, R., Holm, D.	Room: Isleta <b>Computational Micro- and Nano-Fluidics</b> <b>Session I</b> Session Chairs: Aluru, N., Shapiro, B.
09:45	KEYNOTE: Stabilized FE Simulations of Transport/Reaction Systems: Algorithms and Applications Shadid, J.* , Salinger, A., Pawlowski, R., Lin, P.	KEYNOTE: Variational and Multiscale Methods in Turbulence with Particular Emphasis on Large Eddy Simulation Hughes, T.*	KEYNOTE: Large Eddy Simulation of Multiphase Reacting Flows in Complex Combustors Moin, P.*	KEYNOTE: Fluid Experiments in Single Multiwall Carbon Nanotubes: A Novel Platform to Study Fluid Transport and Phase Change at the Nanoscale Megaridis, C.* , Yazicioglu, A., Gogotsi, Y.
10:09	Proton Exchange Membrane Fuel Cells: Modeling and Simulation Using Adaptive Finite Elements Carnes, B.*	A Comparison of the Galerkin and Stabilized FEM for Nonisothermal, Low Speed Flows Gartling, D.*	Simulating Turbulent Flows in Complex Geometries Mahesh, K.*	Mimicking the Superhydrophobicity of Lotus Leaves - Designing Self-Cleaning Surfaces Patankar, N.*
10:33	Stability Analysis and Optimization of Transport/Reaction Systems Salinger, A.* , Shadid, J., Pawlowski, R., van Bloemen Waanders, B.	Enhanced-Discretization Space-Time Technique (EDSTT) Tezduyar, T.* , Sathe, S.	Multiscale Turbulence Modeling in the Discontinuous Galerkin Method Collis, S.* , Ghayour, K., Ramakrishnan, S.	Electrokinetic Induced Mixing in Microdevices Tafti, D.* , Narayan, S.
10:57	Simulating Surface Kinetics and Bulk Transport in Solution Crystal Growth Dai, B., Kwon, Y., Yeckel, A., Derby, J.*	Mixed Interface-Tracking/Interface-Capturing Technique (MITICT) -- Implementation for Fluid-Object Interactions with Two Fluids Ungor, M., Akin, J.E.* , Tezduyar, T.	Multi-Resolution Projection vs. Low Pass Filtering in Large Eddy Simulation Vasilyev, O.* , Goldstein, D.	Numerical Simulation and Quantitative Uncertainty Assessment of Electrochemical Microchannel Flow Debusschere, B.* , Najm, H., Matta, A., Knio, O., Ghanem, R., Le Maître, O.
11:21				

MONDAY, JULY 28: 9:45 –11:45 AM				
Time 24 Min. Talks	Room: Jemez <b>Computational Methods on Nonmatching and Moving Grids</b> <b>Session I</b> Session Chairs: Ramm, E., Wall, W.	Room: Laguna <b>Incompressible CFD – Innovative Algorithms and Applications</b> <b>Session I</b> Session Chairs: Gartling, D., Martinez, M.	Room: Nambe'́ <b>Advances in Hydrocode Technology</b> <b>Session I Eulerian/ALE Hydro Methods</b> Session Chairs: Benson, D., Carroll, D.	Room: Navajo <b>Computational Biological Fluid Dynamics</b> <b>Session I</b> Session Chairs: Dillon, R., Fauci, L.
09:45	KEYNOTE: Moving Interfaces by Arbitrary Moving Discontinuities in Finite Elements  Belytschko, T.* , Chessa, J., Legay, A., Wang, H.	KEYNOTE: Convection Modeling in Dendritic Solidification  Heinrich, J.*	KEYNOTE: Multilevel Adaptive Mesh Refinement for Structured ALE Hydrodynamics  Anderson, R.* , Elliott, N., Pember, R.	KEYNOTE: Computation of Blood Flow in Three-Dimensional Models of the Heart  McQueen, D.* , Peskin, C.
10:09	A Level-Set Based Shell-Fluid Coupling Technique: Application to Airbag Deployment  Cirak, F.* , Radovitzky, R., Thoutireddy, P.	Representing Realistic Complexity in Models of Melt Crystal Growth: Three-Dimensional and Time-Dependent Flows, Phase Boundaries, and Furnaces  Yeckel, A.* , Pandy, A., Derby, J.	Efficient Local Bound-Preserving Conservative Interpolation  Kucharik, M., Shashkov, M.* , Wendorff, B.	A Computational Model of Invaginating Trophoblast Tissue  Rejniak, K.* , Kliman, H., Fauci, L.
10:33	A Variant of the Extended Finite Element Method  Bellur-Ramaswamy, R.* , Bruns, T., Tortorelli, D.	Large-Scale Finite Element Simulation of a Class of Incompressible Non-Newtonian Fluids with Application to Natural Convection Flows  Barth, W.* , Carey, G., Chow, S.	Conservative and Adaptive Front Tracking Method for Fluid Interface Instabilities  Li, X.* , Glimm, J., Marchese, A., Xu, Z.	Immersed Interface Methods for Fluid Dynamics Problem  Lee, L.*
10:57	Modeling on Nonmatching Grids with Approximate Distance Fields  Shapiro, V.* , Tsukanov, I.		Implicit Hydrodynamics for Cookoff Problems  Wallin, B.*	A Continuum Model of Platelet Aggregation  Guy, R.* , Fogelson, A.
11:21				

MONDAY, JULY 28: 9:45 –11:45 AM				
Time 24 Min. Talks	Room: Picuris <b>Discontinuous Galerkin Methods for Computational Mechanics</b>  <b>Session I</b> <b>Hyperbolic and Mixed Problems</b>  Session Chairs: Cockburn, B., Proft, J.	Room: Sandia <b>Physical and Computational Modeling of Biological Tissues</b>  <b>Session I</b> <b>Growth and Remodeling</b>  Session Chairs: Holzapfel, G., Criscione, J.	Room: Santa Ana <b>Methods and Applications in Coupled Engineering Simulations</b>  <b>Session I</b>  Session Chairs: Parsons, D., Ferencz, R.	Room: Santo Domingo <b>p- &amp; hp Finite Elements and Boundary Element Methods</b>  <b>Session I</b>  Session Chairs: Demkowicz, L., Patra, A.
09:45	KEYNOTE:  Adaptive and Parallel Discontinuous Galerkin Methods for Hyperbolic Conservation Law	KEYNOTE:  A Continuum Treatment of Growth in Soft Biological Tissue: Coupling of Mass Transport and Mechanics	KEYNOTE:  Finite Element Procedures for Non-Linear Aeroelastic Problems	KEYNOTE:  The p-Version in Professional Practice: An Overview
10:09	Chevaugeon, N., Flaherty, J.*, Krivodonova, L., Remacle, J., Shephard, M.	Arruda, E.*., Grosh, K., Garikipati, K., Narayanan, H., Calve, S.	Bottasso, C.*., Bauchau, O.	Szabo, B.*
10:33	Discontinuous Galerkin Method for Non-Equilibrium Plasma Flows  Lin, G.*., Karniadakis, G.	Theory and Numerics of Mechanically-Induced Healing Processes  Kuhl, E.*., Steinmann, P.	Tempo and Calagio: Examples of Loose Coupling for Multi-Mechanics Simulations  Hales, J.*	p-FEM for Fluid-Structure Interaction Problems  Yosibash, Z.*., Kirby, M., Karniadakis, G.
10:57	Spacetime Discontinuous Galerkin Method for Systems of Nonlinear Conservation Laws  Palaniappan, J.*., Haber, R., Jerrard, R.	Fully 3D Continuum and Computational Formulations for Stress-Modulated Soft Tissue Growth  Lu, J.*., Raghavan, M.	An Efficient Implicit Coupling Scheme for Parallel Multi-Physics Simulations with Application to Solid Rocket Motors  Namazifard, A.*., Jiao, X., Blazek, J., Hjelmstad, K.	Local p-Refinement for Stabilized Finite Element Methods  Karanam, A.*., Jansen, K.
11:21	Locally Divergence Free Discontinuous Galerkin Methods for MHD  Li, F.*., Shu, C.	A Computational Framework for Anisotropic Growth  Menzel, A.*., Kuhl, E., Steinmann, P.	Constructive Topological Domain Modeling for Computational Engineering  Gerstle, W.*., Cheng, P.	Towards Large Scale hp-Adaptive Simulations  Devloo, P.*., Bravo, C., Rylo, E.

MONDAY, JULY 28: 9:45 –11:45 AM				
Time 24 Min. Talks	Room: Taos <b>Computational Contact Mechanics</b> <b>Session I</b>  Session Chairs: Heinstein, M., Mitchell, J.	Room: Tesuque <b>Inverse Problems</b> <b>Session I</b>  Session Chairs: Oberai, A., Barbone, P.	Room: Zuni <b>Computational Mechanics: From Theory to Practice (A Honorary Minisymposium on the Occasion of Ted Belytschko's 60<sup>th</sup> Birthday)</b> <b>Session I</b>  Session Chairs: Chen, J., Dolbow, J.	Room: La Cienega <b>Symposium on Crashworthiness &amp; Impact Engineering</b> <b>Session I</b>  Session Chairs: Wu, S., Deng, B.
09:45	KEYNOTE:  A Scalable Dual-Primal Domain Decomposition Method for the Solution of Contact Problems with Friction  Rebel, G.* , Farhat, C., Lesoinne, M., Avery, P.	KEYNOTE:  Imaging in Clutter  Papanicolaou, G.*	Locking in Analysis of Shells: Accomplishments and Open Issues  Stolarski, H.*  A Computational Strategy for Verification and Validation in Computational Mechanics; Part 1: The Deterministic Case  Oden, J.* , Babuska, I.	KEYNOTE:  Numerical Modeling Of Human Occupants And Automotive Safety  Yang, K.* , King, A.
10:09	Two Dimensional Mortar Contact Methods for Large Deformation Frictional Sliding  Yang, B.* , Laursen, T.	Solution of Inverse Acoustic Scattering Problems Using Shape Sensitivity Analysis  Feijoo, G.*	A Computational Strategy for Verification and Validation in Computational Mechanics; Part 2: The Case of Data with Uncertainties  Babuska, I.* , Oden, J.	Application Of Non-Deterministic Methods To Assess Aircraft Impact Experimental and Simulation Uncertainties  Lyle, K.* , Stockwell, A.
10:33	A Formulation of Conserving Impact System Based on Localized Lagrange Multipliers  Miyazaki, Y.* , Park, K.	Inverse Acoustic Scattering in a Random Environment  Ghanem, R., Faverjon, B.*	Bridging Methods for Nano-scale Mechanics and Materials  Liu, W.*	
10:57	Consistent and Inconsistent Lagrange Multiplier Methods for the Finite Element Solution of Unilateral Contact Problems Using Non-matching Meshes  Heintz, P.* , Hansbo, P.	Estimation Of Noise Sources Using An Enhanced Finite Element Formulation  Paulino de Romero, R., Rochinha, F.*	Presentation in Honor of Ted Belytschko  Hughes, T.*	Fem Modeling Of Pediatric Brain Injury Modeling Under Cyclic Loading  Patra, A., Aswathnarayana, S.*
11:21				

**MONDAY, JULY 28: 9:45 –11:45 AM**

Time 24 Min. Talks	Room: Mesilla <b>Advances in Computational Methods for Reservoir Geomechanics Modeling</b> <b>Session I</b> Session Chairs: Saigal, S., Kumar, P.	Room: Pecos <b>Recent Advances in Functionally Graded Materials</b> <b>Session I</b> Session Chairs: Han, X., Cho, J.	Room: Ruidoso <b>Stochastic Fracture Mechanics</b> <b>Session I</b> Session Chairs: Molinari, J., Graham-Brady, L.	Room: San Miguel <b>Computational Engineering Design Optimization</b> <b>Session I</b> Session Chair: Giunta, A.
09:45	KEYNOTE: Discontinuous Galerkin and Mixed Finite Element Methods for Modeling Biot's Consolidation Model of Poro-elasticity  Wheeler, M.*	KEYNOTE: Static and Dynamic Deformations of Functionally Graded Plates by Meshless Local Petrov-Galerkin Method  Batra, R.*, Qian, L., Chen, L.	Scaling of Fracture Strength in Disordered Quasi-Brittle Materials  Nukala, P. *, Simunovic, S.  Behavior of Spatially Homogeneous and Inhomogeneous Random Networks  Schafer, B., Arwade, S.*	Engineering Design Optimization Algorithms: Theory and Practice  Giunta, A. *, Eldred, M.  Better Optimization of Nonlinear Uncertain Systems (BONUS): A New Algorithm for Stochastic Programming for Large Scale Systems  Diwekar, U. *, Sahin, K.
10:09	Localized Compaction in Reservoir Deformation  Rudnicki, J.*	Adaptive Volume Fraction Design for Thermal Stress Reduction in Functionally Graded Materials  Cho, J.* , Park, H.	Application of Crystal Plasticity to Fracture Analysis in Metallic Materials  Xu, S.* , Wawrynek, P., Heber, G., Iesulauro, E., Ingraffea, A.	Reliability-Based Design Optimization of Structural Durability Under Manufacturing Tolerances  Youn, B.* , Choi, K.
10:33	Numerical Simulations of Rock Mechanics Laboratory Tests on Tennessee Marble: Axisymmetric and Plane Strain Formulations  Albert, R.* , Rudnicki, J.	Computational Intelligence for Shape Control of FGM Smart Plates  Liew, K.* , He, X., Ray, T.	Probabilistic Estimate of Surface Earthquake Faults by Using Spectral Stochastic Finite Element Method  Nakagawa, H.* , Hori, M., Oguni, K.	Reliability Based Fatigue Life Constraints for Structural Optimization: General Approach  Kim, Y.* , Kyuba, H., Vik, T., Organ, D., Hurt III, W.
10:57			Stochastic Analysis of Localised Failure  Gutierrez, M.* , de Borst, R.	Reliability-Based Analysis and Design Optimization of MEMS  Allen, M.* , Raulli, M., Maute, K.
11:21				

MONDAY, JULY 28: 9:45 –11:45 AM				
Time 24 Min. Talks	Room: Tijeras <b>Computational Modeling of Plastic Flow in Small Volumes</b> <b>Session I</b> Session Chairs: Huang, Y., Benzerga, A.	Room: Aztec <b>4th Symposium on Trends in Unstructured Mesh Generation: Part I</b> <b>Session I</b> <b>Plenary Session</b> Session Chairs: Owen, S., Shepard, M.	Room: Cimarron <b>Stability of Thin-Walled Structures</b> <b>Session I</b> Session Chairs: Mang, H., Hackl, K.	Room: Dona Ana <b>Multiscale Modeling and Simulation of Material Behavior</b> <b>Session I</b> Session Chairs: Strachan, A., Bringa, E.
09:45	Self-Assembly of Quantum Dots by the Stress Field of Interfacial Dislocations in Multi-Layer Thin Films  Hu, Q.* , Ghoniem, N.	General Mesh Adaptation using Mesh Modifications  Li, X.* , Shepard, M., Beall, M.	KEYNOTE:  Sensitivity Investigations Concerning the Stability of Thin-Walled Shell Structures  Schweizerhof, K.* , Ewert, E., Vielsack, P.	KEYNOTE:  Modeling of Chalcogenide-Based Phase Change Materials  Schultz, P.* , Martin, M., Edwards, A.
10:09	An Analysis of Dislocation Nucleation Near a Free Surface  Liu, Y.* , Needleman, A., Van der Giessen, E.	Object-Oriented Automatic Unstructured Surface Mesh Generation  Tremel, U., Deister, F.* , Hassan, O., Weatherill, N.P.		
10:33	Simulation of Subscale Features Induced by Grain Interactions in Polycrystals  Kuchnicki, S., Zhao, Z., Cuitino, A., Radovitzky, R.*	CCSweep: Automatic Decomposition of Multi-Sweep Volumes  White, D.* , Saigal. S., Owen, S.	Conversion of Imperfection-Sensitive to -Insensitive Elastic Structures  Mang, H.* , Schranz, C.	First Principles-Based Atomistic Modeling of Plasticity in Ta  Strachan, A.* , Wang, G., Cagin, T., Goddard, W.
10:57	Influence of Grain Boundaries on the Deformation of Polycrystals in a Dislocation Density-Based Plasticity Formulation  Arsenlis, A.* , Bulatov, V., Becker, R., Parks, D.	Compressing Analysis Times in Highly Diverse Computational Environments  Blacker, T.* , Hanks, B., Shepherd, J., Leland, R.	Adaptive Wavelet-Algorithms and Buckling of Inelastic Shells  Hackl, K.* , Hoppe, U.	Large Scale Atomistic Simulations of Shock Propagation in Metals  Bringa, E.*
11:21	Computations of Dislocation Structures and Deformation Textures in Nano-Structured Metals  Ortiz, M.* , Sivakumar, S.		A Perturbation Method for Buckling and Vibrations of Imperfect Structures  Jansen, E.*	Determination of the Mechanical Properties of Amorphous Columnar Thin Films from MD Simulations  Gray, G.* , Costanzo, F., Andia, P., Yurick, T.

MONDAY, JULY 28: 9:45 –11:45 AM				
Time 24 Min. Talks	Room: Galisteo <b>No Session in this Room</b>	Room: Ballroom A <b>Symposium on Meshfree Methods: Part I</b> <b>Session I</b> <b>Hybrid and Coupled Methods</b>  Session Chairs: Idelsohn, S., Schweitzer, M.	Room: Ballroom B <b>Multiple-scale Analysis of Nanoscale Mechanics and Materials</b> <b>Session I</b> <b>Multiscale Methods I</b>  Session Chairs: Qian, D., Li, S.	
09:45		KEYNOTE:  Meshfree Formulation Coupled with Particular Solution for Boundary Value Problems  Chen, J.* , Wang, D., Dong, S.	KEYNOTE:  Challenges in Mechanics of ~1D Materials: Bulk vs Surface in Nanowires and Nanotubes  Yakobson, B.* , Dumitrica, T., Couchman, L., Hua, M., Zhao, Y.	
10:09		Meshfree Methods Based on Mixed Formulations with Independent Rotational Degrees of Freedom  Sansour, C.* , Skatulla, S.	Continuum Mechanics Modelling and Finite Element Simulations of the Nonlinear Mechanics of Carbon Nanotubes  Arroyo, M.* , Belytschko, T.	
10:33		Coupling of Element-Free Galerkin Method and Boundary Element Method Using the Domain Decomposition Approach  Kim, M., Lee, S.*	Instability of a Single-Wall Carbon Nanotube under Torsion  Zhang, P.* , Huang, Y., Jiang, H., Huang, K.	
10:57		Anisotropy in Polycrystalline Tin under Simple Shear  Brydon, A., Sulsky, D.* , Schreyer, H., Shen, Y.	An Atomistic Model-Based Continuum Analysis Incorporating the Finite Temperature Effect  Jiang, H.* , Huang, Y., Hwang, K.	
11:21				

**Monday, July 28**  
**1:00 – 1:45 PM**

**Plenary Lecture 2**

**Ballroom A**



**Monday, July 28**  
**1:00 – 1:45 PM**

**Plenary Lecture 3**

**Ballroom B**



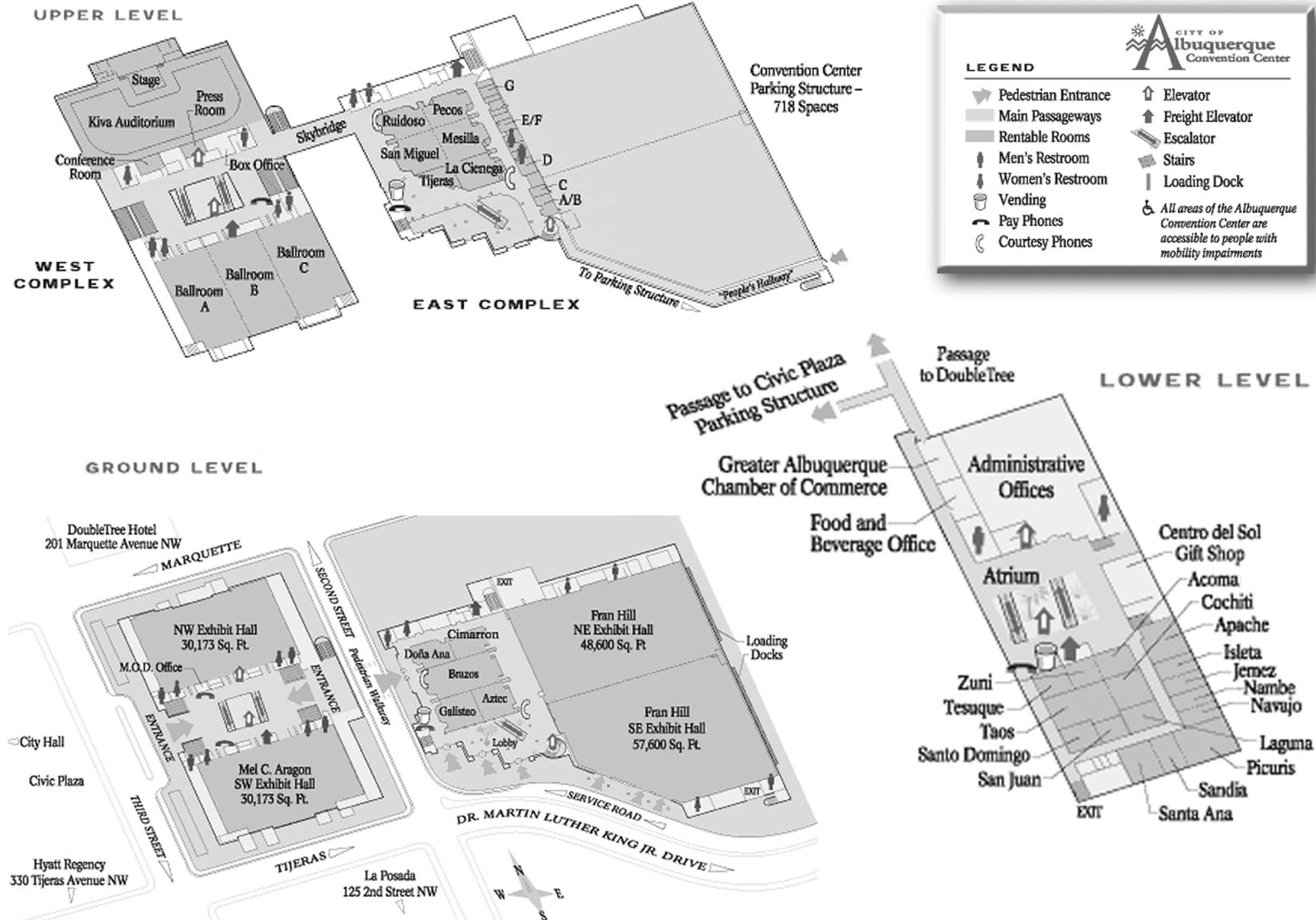
***Numberical Representation of the Large Scales  
of Turbulence***

**Robert Moser**  
**University of Illinois at Urbana-Champaign**

***Computational Discrete Dislocation Plasticity***

**Alan Needleman**  
**Brown University**

# Albuquerque Convention Center Map



**MONDAY, JULY 28: 02:00 – 04:00 PM**

<b>Room</b>	<b>Location</b>	<b>Technical Session Title</b>
Acoma	W. 1 <sup>st</sup> Floor	Computational Simulation of Transport/Reaction Systems: Solution Algorithms and Applications Session II
Apache	W. 1 <sup>st</sup> Floor	Advances in Flow Simulation and Modeling : Session II
Cochiti	W. 1 <sup>st</sup> Floor	Numerical Methods and Modeling in Turbulence Simulation : Session II
Isleta	W. 1 <sup>st</sup> Floor	Computational Micro- and Nano-Fluidics : Session II
Jemez	W. 1 <sup>st</sup> Floor	Computational Methods on Nonmatching and Moving Grids : Session II
Laguna	W. 1 <sup>st</sup> Floor	Incompressible CFD – Innovative Algorithms and Applications : Session II
Nambe'	W. 1 <sup>st</sup> Floor	Advances in Hydrocode Technology : Session II Modeling Material Behavior
Navajo	W. 1 <sup>st</sup> Floor	Computational Biological Fluid Dynamics : Session II
Picuris	W. 1 <sup>st</sup> Floor	Discontinuous Galerkin Methods for Computational Mechanics : Session II Solid Mechanics
Sandia	W. 1 <sup>st</sup> Floor	Physical and Computational Modeling of Biological Tissues : Session II Soft Tissue Mechanics
Santa Ana	W. 1 <sup>st</sup> Floor	Methods and Applications in Coupled Engineering Simulations : Session II
Santo Domingo	W. 1 <sup>st</sup> Floor	p- & hp Finite Elements and Boundary Element Methods : Session II
Taos	W. 1 <sup>st</sup> Floor	Computational Contact Mechanics : Session II
Tesuque	W. 1 <sup>st</sup> Floor	Inverse Problems : Session II
Zuni	W. 1 <sup>st</sup> Floor	A Memorial Minisymposium in Honor of Michael Crisfield : Session I
La Cienega	E. Upper level	Symposium on Crashworthiness & Impact Engineering : Session II
Mesilla	E. Upper level	Advances in Computational Methods for Reservoir Geomechanics Modeling : Session II
Pecos	E. Upper level	Recent Advances in Functionally Graded Materials : Session II
Ruidoso	E. Upper level	Mechanism-Based Approaches to Fracture and Fatigue : Session I
San Miguel	E. Upper level	Computational Engineering Design Optimization : Session II
Tijeras	E. Upper level	Computational Modeling of Plastic Flow in Small Volumes : Session II
Aztec	E. Lower Level	4 <sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part I : Session II Mesh Optimization I
Cimarron	E. Lower Level	Stability of Thin-Walled Structures : Session II
Dona Ana	E. Lower Level	Multiscale Modeling and Simulation of Material Behavior : Session II
Galisteo	E. Lower Level	Sensitivity Analysis and Optimization of PDE-Based Simulations : Session I
Ballroom A	W. 3 <sup>rd</sup> Floor	Symposium on Meshfree Methods: Part I : Session II Fluids I
Ballroom B	W. 3 <sup>rd</sup> Floor	Multiple-scale Analysis of Nanoscale Mechanics and Materials : Session II Multiscale Methods II



**MONDAY, JULY 28: 2:00 – 4:00 PM**

Time 24 Min. Talks	Room: Acoma <b>Computational Simulation of Transport/Reaction Systems: Solution Algorithms and Applications</b> <b>Session II</b> Session Chairs: Salinger, A., Smith, T.	Room: Apache <b>Advances in Flow Simulation and Modeling</b> <b>Session II</b> Session Chair: Tezduyar, T.	Room: Cochiti <b>Numerical Methods and Modeling in Turbulence Simulation</b> <b>Session II</b> Session Chairs: Jansen, K., Pulin, D.	Room: Isleta <b>Computational Micro- and Nano-Fluidics</b> <b>Session II</b> Session Chairs: Patankar, N., Dutta, P.
02:00	KEYNOTE: Hierarchical Simulation of Multi-Scale Interactions in Turbulent Reacting Flows  Menon, S.*	KEYNOTE: Seamless Computing of Fluid Dynamics by a Node-Based Finite Element Method  Yagawa, G.* , Fujisawa, T., Tsuchida, J.	Variational Counterpart of the Germano Identity  Wanderer, J.* , Oberai, A., Bazilevs, Y., Hughes, T.  "Deconvolution" Type Models Used in Finite Differences as a Way to Recover Energy Conserving Schemes  Georges, L., Winckelmans, G.*	KEYNOTE: The Translocation of a Particle Through a Flow-Filled Nanochannel  Drazer, G., Koplik, J., Acrivos, A., Khusid, B.*
02:24	Detailed End-to-End Simulations of a Low-Swirl Laboratory Burner  Day, M.* , Bell, J., Beckner, V., Lijewski, M.	A Nested Iterative Scheme for Indefinite Linear Systems in Particulate Flows  Baggag, A., Sameh, A.*	Lagrangian Averaged Navier-Stokes-Alpha (LANS-alpha) Equations for Modeling Turbulence  Holm, D.*	Molecular Dynamics Simulation of Nanochannel Electromagnetic Flows  Qiao, R., Aluru, N.*
02:48	Turbulent Mass Transfer with First Order Chemical Reaction  Mitrovic, B.* , Papavassiliou, D.	Finite Element SUPG Parameters Computed From Element Edge Matrices For Compressible Flows  Catabriga, L., Coutinho, A.* , Tezduyar, T.	Toward Optimal LES on Unstructured Grids  Haselbacher, A.* , Moser, R., Zandonade, P.	Modeling Surface Tension under Applied Fields: Energy Methods, Stokes Flow, and Level Sets  Shapiro, B.* , Walker, S., Fortner, N.
03:12	Large Scale Simulation of Chem/Bio Dispersion in Urban Area for Home Land Security  Abedi, J.* , Baffour, R., Zellars, B., Ji, A., Watts, M., Fuller, A., Ford, K., Bota, K., Osemwengie, I., Aliabadi, S., Johnson, A.	Discontinuity-Capturing Directional Dissipation (DCDD) in Computation of Incompressible Flows  Rispoli, F.* , Borrelli, P., Tezduyar, T.		An Efficient Algorithm for Simulating Micro-Colloidal Devices  Liu, D.* , Maxey, M., Karniadakis, G.
03:36				

**MONDAY, JULY 28: 2:00 – 4:00 PM**

Time 24 Min. Talks	Room: Jemez <b>Computational Methods on Nonmatching and Moving Grids</b> <b>Session II</b> Session Chairs: Wall, W., Bungartz, H.	Room: Laguna <b>Incompressible CFD – Innovative Algorithms and Applications</b> <b>Session II</b> Session Chairs: Ingber, M., Gartling, D.	Room: Nambe' <b>Advances in Hydrocode Technology</b> <b>Session II</b> <b>Modeling Material Behavior</b> Session Chairs: Shaskov, M., Robinson, A.	Room: Navajo <b>Computational Biological Fluid Dynamics</b> <b>Session II</b> Session Chairs: Fauci, L., Dillon, R.
02:00	KEYNOTE: A Large Deformation 3D Mortar Contact Method  Puso, M.*, Laursen, T.	A High-Order Space-Time Coupled Least-Squares Finite Element Formulation for Incompressible Fluid Flows  Pontaza, J.*, Reddy, J.  Numerical Methods for Incompressible Newtonian Fluid Flow  Cai, Z.*	KEYNOTE: Direct Simulation of Polycrystals  Barton, N., Fu, H., Benson, D.*	KEYNOTE: Falling Paper, Flapping Flight, and Making A Virtual Insect  Wang, J.*
02:24	Discretization Techniques and Iterative Solvers for Non-Matching Triangulations  Wohlmuth, B.*	Exponential Integrators for the Incompressible Navier-Stokes Equations  Newman, C.*., Lehoucq, R.	Ductile Fracture of Metal with Eulerian Hydrocode  Okazawa, S.*., Kawaguchi, A., Fujikubo, M.	Numerical Simulation of Spirochete Motility  Medovikov, A.*., Cortez, R., Fauci, L.
02:48	hp Mortar Finite Element Method for Non-Matching Grids Tuned to Parallel Implementation  McGee, W.*., Seshaiyer, P.	Higher-Order Poly-Region Boundary Element Methods for Unsteady Navier-Stokes Flows  Grigoriev, M.*., Dargush, G.	Numerical Simulation of Directional Tensile Failure in the Eulerian Godunov Framework  Lomov, I.*	An Integrative Model of Axoneme Mechanic in Ciliary and Sperm Motility  Dillon, R.*., Fauci, L., Omoto, C.
03:12	Stress Analysis of Homogeneous Domains using Implicit Meshing  Bishop, J.*	Multi-Level Boundary Element Methods for Stokes Flows  Dargush, G.*., Grigoriev, M.	Simulation of Crack Propagation due to Brittle and Ductile Failures in a Microporous Thermoelastoviscoplastic Prenotched Plate  Batra, R., Lear, M.*	Three Dimensional Modeling of a Suspension of Swimming Microrganisms  Hopkins, M.*
03:36				

**MONDAY, JULY 28: 2:00 – 4:00 PM**

Time 24 Min. Talks	Room: Picuris <b>Discontinuous Galerkin Methods for Computational Mechanics</b> <b>Session II Solid Mechanics</b> Session Chairs: Dawson, C., Prasad, M.	Room: Sandia <b>Physical and Computational Modeling of Biological Tissues</b> <b>Session II Soft Tissue Mechanics</b> Session Chairs: Holzapfel, G., Kuhl, E.	Room: Santa Ana <b>Methods and Applications in Coupled Engineering Simulations</b> <b>Session II</b> Session Chairs: Parsons, D., Hoover, C.	Room: Santo Domingo <b>p- &amp; hp Finite Elements and Boundary Element Methods</b> <b>Session II</b> Session Chairs: Flaherty, J., Moore, P.
02:00	Recent Developments in Local Discontinuous Galerkin Methods for Linear Elasticity  Kanapady, R., Sandhu, S., Srinivasan, S., Cockburn, B., Tamma, K.*., Stolarski, H.	KEYNOTE:  Biomechanical Modeling of Cervical Tissue: A Quantitative Investigation of Cervical Funneling	KEYNOTE:  Adaptive Space-Time Aeroelastic Bridge Simulations	Fully Automatic hp-Adaptivity for Maxwell Equations  Demkowicz, L.
02:24	A Modification of the Crouzeix-Raviart Element Valid for Non-Linear Finite Deformation Solid Mechanics  Solberg, J.*., Puso, M.	Socrate, S.*	De Sampaio, P., Hallack, P., Pfeil, M., Coutinho, A.*., Battista, R.	Computing Maxwell Eigenvalues in 3D using Conforming hp FEM  Frauenfelder, P.*., Schwab, C., Schmidt, K., Lage, C.
02:48	Optimal BV Estimates for a DG Method for Linear Elasticity  Lew, A., Neff, P., Sulsky, D.*., Warburton, T., Ortiz, M.	Computations for Predicting Material Properties of Tracheal Smooth Muscle Tissue  Pidaparti, R.*., Sarma, P., Meiss, R.	Zapotec: A Coupled Eulerian-Lagrangian Program for Earth Penetration  Bell, R.*., Bessette, G., Vaughan C.	Integration of hp-Adaptivity with a Two Grid Solver: Applications to Electromagnetics  Pardo, D.*
03:12	Local Discontinuous Galerkin Formulations for Beam Problems  Cockburn, B.*., Stolarski, H., Kanapady, R., Sandhu, S., Soon, S., Tamma, K.	Mechanical Characterization of Human Skin from in Vivo Tests and Simulation of Reconstructive Surgery  Gambarotta, L., Massabo, R.*., Morbiducci, R.	A Distributed Simulation Environment Based on "Gluing Algorithms"  Wang, J., Ma, Z.*., Hulbert G.	High Order Nodal DG-FEM for the Maxwell Eigenvalue Problem  Warburton, T.*., Hesthaven, J.
03:36	Flux Choices for Parabolic/Elliptic Problems: Algorithms and Applications  Kirby, R.*	Mechanical and Biochemical Characterization of Self-Assembling Tendon Constructs  Calve, S.*., Arruda, E., Dennis, R., Baar, K., Grosh, K., Garikipati, K.	Massively Parallel 3-D Coupled Solid Propellant Rocket Simulations  Fiedler, R.*., Jiao, X., Breitenfeld, M., Haselbacher, A., Blazek, J., Geubelle P.	A Goal-Oriented Finite and Infinite Element Based hp-Adaptive Approach to Reliable and Efficient Determination of Radar Cross-Section  Zdunek, A., Rachowicz, W.*

MONDAY, JULY 28: 2:00 – 4:00 PM				
Time 24 Min. Talks	Room: Taos <b>Computational Contact Mechanics</b> <b>Session II</b>  Session Chairs: Heinstein, M., Mitchell, J.	Room: Tesuque <b>Inverse Problems</b> <b>Session II</b>  Session Chairs: Barbone, P., Feijoo, G.	Room: Zuni <b>A Memorial Minisymposium in Honor of Michael Crisfield</b> <b>Session I</b>  Session Chairs: Owen, D., Taylor, R.	Room: La Cienega <b>Symposium on Crashworthiness &amp; Impact Engineering</b> <b>Session II</b>  Session Chairs: Neal, M., Alves, J.
02:00	Subdivision Schemes for the Parameterization of Contact Surfaces with Arbitrary Mesh Topology  Stadler, M.* , Holzapfel, G.	KEYNOTE:  Determining Elastic and Acoustic Parameters from Travel Times	M.A. Crisfield -- A Brief Reflection  Owen, D.*  KEYNOTE:  Breaking Liquid Bridges	Assessment Of Failure Modeling With Thinning Strain Criterion  Cheng, C.*
02:24	Explicit Transient Dynamics Enforcement of Frictional Sliding Contact in ACME  Brown, K.* , Heinstein, M., Jones, R., Voth, T.	Uhlmann, G.*	Peric, D.* , Dettmer, W., Kuttler, C.	Reduction Of Vehicle Impact Severity By Redesigned Road Restraint System Distance Spacer  Vesenjak, M.* , Ren, Z.
02:48	A Contact Algorithm for the Signorini Problem Using Space-Time Finite Elements  Pattillo II, P.* , Tortorelli, D.	A Unique Identifiability of Elasticity Parameters from Time Dependent Iterior Displacement Measurement  McLaughlin, J., Yoon, J.*	On the Geometric Structure of the Nonlinear Dynamics of Finite Element Models of Elastic Solids and Structures  Armero, F.*	Sled Tests And Simulations Of Offset Deformable Barrier  Mayer, R.* , Webb, S., Wang, J., Liu, W., Zhou, Q.
03:12	A Simple One Step Line Search For Use In Quasi-Static Solid Mechanics Contact Calculations  Mitchell, J.* , Heinstein, M.	Recent Progress On Computational Inverse Techniques For Crack Detection Using Elastic Waves  Han, X.* , Liu, G.	A Unified Approach to the Model-Reduction of Aero-Elastic Systems  Matthies, H.* , Meyer, M.	On Computation Of Sensitivities For 3D Plasticity With Non-Linear Hardening  Wisniewski,K.* , Kowalczyk, P., Turska, E.
03:36	On the Concept of an Arbitrary Reference Configuration Formulation for Finite Deformation Contact-Impact Problems  Zhou, X.* , Sha, D., Tamma, K.	Arbitrarily Wide-Angle Wave Equations and their Application to Subsurface Imaging and Seismic Migration  Heidari, A.* , Guddati, M.	Towards a Standard for Finite Element Data Exchange using XML  Moita, G.* , Pinheiro, M.	Numerical Simulations Of The Collapse Behaviour Of A New Foam-Filled Structure  Attia, M.* , Meguid, S.

**MONDAY, JULY 28: 2:00 – 4:00 PM**

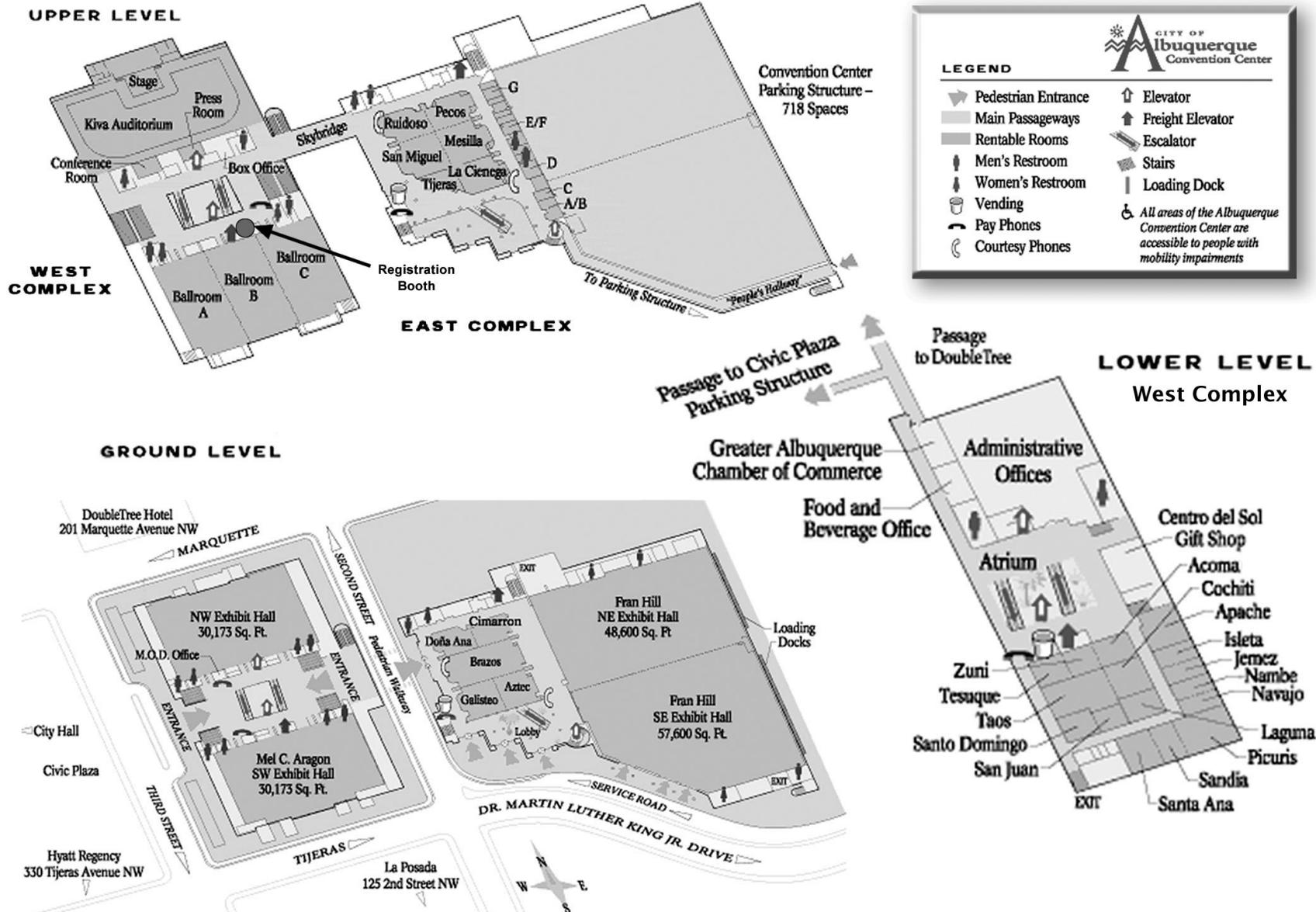
Time 24 Min. Talks	Room: Mesilla <b>Advances in Computational Methods for Reservoir Geomechanics Modeling Session II</b> Session Chairs: Rudnicki, J., Albert, R.	Room: Pecos <b>Recent Advances in Functionally Graded Materials Session II</b> Session Chairs: Vemaganti, K., Lipton, R.	Room: Ruidoso <b>Mechanism-Based Approaches to Fracture and Fatigue Session I</b> Session Chairs: Klein, P., Seigmund, T.	Room: San Miguel <b>Computational Engineering Design Optimization Session II</b> Session Chair: Giunta, A.
02:00	Subsidence and Horizontal Movement Maps for Application of Reservoir Characterization Morita, N.*	Stress Intensity Factors for Surface Cracks in Functionally Graded Materials Under Mode I Thermomechanical Loading Walters, M.* , Paulino, G., Dodds Jr., R.	KEYNOTE: Revealing the Microstructural Processes Controlling Deformation and Fracture Robertson, I.*	Combining Soft Computing and Parallel Processing for the Optimum Design of Large-Scale Structures Lagaros, N.* , Charmpis, D., Papadrakakis, M.
02:24	Three-Dimensional Miscible Displacement Simulations in Porous Media with Gravity Override Riaz, A., Meiburg, E.*	Continuum Shape Sensitivity Analysis of Cracks in Functionally Graded Materials Rao, B.* , Rahman, S.		Parallel Large-Scale Optimization For Source Inversion For Convective-Diffusive Transport Akcelik, V.* , Biros, G., Ghattas, O., van Bloemen Waanders, B.
02:48	Computation of Sand Fluidization Phenomena Coupled with Geomechanics Using Stabilized Finite Elements Wan, R.* , Wang, J.	Dispersion and Characteristics of Waves in Functionally Graded Piezoelectric Cylinders Han, X.* , Liu, G.	Adhesion of MEMS Microcantilevers de Boer, M.* , Plass, R.	Adaptive Response Surface Method with Smoothing Spline in the Grid Mimura, Y.* , Yoshimura, S., Kawai, H.
03:12	Finite Element Modeling of Micro Annulus Phenomena in Cemented Wells Miranda, S.* , Morris, W., Bianchi, G.	Micromechanics-Based Elastic Model for Functionally Graded Composites with Particle Interactions Yin, H.* , Sun, L., Paulino, G.	Molecular Dynamics Study on Crack Growth under Cyclic Loading Nishimura, K.* , Miyazaki, N.	Genetic Algorithm Operation Using Parallel Process Lim, O.* , Yoo, W., Hong, K., Lee, H.
03:36			Constitutive Laws for Metallic Interface Separation Motivated by Nanoscale Simulations Spearot, D.* , Jacob, K., McDowell, D.	

**MONDAY, JULY 28: 2:00 – 4:00 PM**

Time 24 Min. Talks	Room: Tijeras <b>Computational Modeling of Plastic Flow in Small Volumes</b> <b>Session II</b>  Session Chairs: Ghoniem, N., Radovitzky, R.	Room: Aztec <b>4<sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part I</b>  <b>Session II</b> <b>Mesh Optimization I</b>  Session Chairs: Chen, J., Owen, S.	Room: Cimarron <b>Stability of Thin-Walled Structures</b>  <b>Session II</b>  Session Chairs: Schweizerhof, K., Hackl, K.	Room: Dona Ana <b>Multiscale Modeling and Simulation of Material Behavior</b>  <b>Session II</b>  Session Chairs: Chen, J., Krenn, C.
02:00	Computational Aspects of Continuum Dislocation Mechanics  Acharya, A.* , Roy, A.	Untangling of Meshes in ALE Simulations  Vachal, P.* , Shashkov, M., Garimella, R.	High Order Predictor-Corrector Schemes using Projection-Technique for Non Linear Elastic Problems  Cadou, J.* , Potier-Ferry, M., Damil, N., Braikat, B.	KEYNOTE:  Multiscale Modeling and Homogenization of Stressed Grain Growth  Chen, J.* , Kotta, V., Mehraeen, S.
02:24	A Mechanism-Based Strain Gradient Plasticity Theory Without the Higher-Order Stress  Qu, S., Huang, Y.* , Beaudoin, A., Hwang, K., Li, M., Gao, H.	An Optimization Approach for 2D Finite Element Mesh Smoothing  Xu, H.* , Newman, T.	Stability and Bifurcation Criteria for Spherical Elastic Shells  Kirkinis, E.* , Haughton, D.	
02:48	Discrete Dislocation Plasticity and Nonlocal Continuum Predictions for Tension and Bending  Benzerga, A.* , Bittencourt, E., Bréchet, Y., Needleman, A., Van der Giessen, E.	On the Choice of the Objective Function and Optimization Strategy for Metric Driven Mesh Adaption  Bottasso, C., Detomi, D.*	A Fully Nonlinear 7-Parameter Shell Model and a Triangular Finite Element for the Analysis of Thin-Walled Shell Structures  Pimenta, P.* , Campello, E., Wriggers, P.	Multiscale Analysis of Heterogeneous Materials  Kadowaki, H.* , Liu, W.
03:12	Size-Effects in Plane Strain Sheet-Necking  Niordson, C.* , Redanz, P.	Multilevel Accelerated Optimization for Problems in Grid Generation  Berndt, M.* , Shashkov, M.	A Fully Nonlinear Shear Flexible Shell Model and a Triangular Finite Element for the Analysis of Thin-Walled Shell Structures  Campello, E.* , Pimenta, P., Wriggers, P.	Three-Dimensional Finite-Element Simulation of Shape-Memory Alloys Using a Thermodynamically-Based Theory of Martensitic Phase Transformations  Jannetti, C.* , Bassani, J., Turteltaub, S.
03:36	The Effect of Microscopic Heterogeneity on Micro- to Macroscopic Deformation Behavior of Amorphous Polymer  Uchida, M.* , Tomita, Y.	Construction of an Objective Function for Optimization Based Smoothing for Surface Meshing  Chen Z., Chen, J.* , Kwok, W.	The Stability of Functionally Graded Cylindrical Thin Shells  Sofiyev, A.*	Numerical Simulation of Evolving Microstructure at Martensitic Phase Transitions  Idesman, A.* , Levitas, V.

MONDAY, JULY 28: 2:00 – 4:00 PM				
Time 24 Min. Talks	Room: Galisteo <b>Sensitivity Analysis and Optimization of PDE-Based Simulations</b> <b>Session I</b>  Session Chairs: Hovland, P., Borggaard, J.	Room: Ballroom A <b>Symposium on Meshfree Methods: Part I</b>  <b>Session II</b> <b>Fluids I</b>  Session Chairs: Sulsky, D., Chen, J.	Room: Ballroom B <b>Multiple-scale Analysis of Nanoscale Mechanics and Materials</b>  <b>Session II</b> <b>Multiscale Methods II</b>  Session Chairs: Wagner, G., Park, H.	
02:00	Sensitivity Analysis for Large Eddy Simulation  Borggaard, J.* , Iliescu, T., Layton, W.	KEYNOTE:  The Meshless Finite Element Method Used as a Particle Method to Solve Incompressible Fluid Mechanic Problems  Idelsohn, S.* , Calvo, N., Del Pin, F., Oñate, E.	KEYNOTE:  Enrichment of FEM with MD Using a Bridging Scale Analysis  Liu, W.*	
02:24	Derivative Calculations for an Euler/Roe Dissipation Scheme  Bartlett, R.* , Berggren, M., Waanders, B.			
02:48	Sensitivity Analysis Capabilities in SUNDIALS  Serban, R.*	Toward a Truly Meshfree High-Resolution Method for Compressible Flow  Dilts, G.*	Coupling of Atomistic and Continuum Simulations Using a Bridging Scale Decomposition  Wagner, G.* , Karpov, E., Liu, W.	
03:12	Regularization of Adjoint Analysis of Multiscale Chaotic Systems  Protas, B.* , Bewley, T.	Finite Pointset Method for Low-Mach-Number Flows  Tiwari, S., Kuhnert, J.*	Wave-Transmitting Boundary Conditions for Molecular Dynamics Simulations: A Green's Function Approach  Karpov, E.* , Wagner, G., Liu, W.	
03:36	An Evaluation of an Analytical Taylor Series Based Software Product (CADOE/ANSYS) for Design Optimization and Probabilistic Analysis  Akkaram, S.* , Chi, W., Soman, N., Wiggs G., Beeson, D., Maffeo, B., Kuhne, C. , Beley, J.	Stream-Vorticity Formulation for 2-Dimensional Navier-Stokes Flow Using Meshfree Point Collocation Method  Kim, D.* , Kim, Y.	Recent Advances in the Bridging Scale  Park, H.* , Liu, W.	

# Albuquerque Convention Center Map



**MONDAY, JULY 28: 4:30 – 6:30 PM**

<b>Room</b>	<b>Location</b>	<b>Technical Session Title</b>
Acoma	W. 1 <sup>st</sup> Floor	Computational Simulation of Transport/Reaction Systems: Solution Algorithms and Applications Session III
Apache	W. 1 <sup>st</sup> Floor	Advances in Flow Simulation and Modeling : Session III
Cochiti	W. 1 <sup>st</sup> Floor	Numerical Methods and Modeling in Turbulence Simulation : Session III
Isleta	W. 1 <sup>st</sup> Floor	Computational Micro- and Nano-Fluidics : SessionIII
Jemez	W. 1 <sup>st</sup> Floor	Computational Methods on Nonmatching and Moving Grids : Session III
Laguna	W. 1 <sup>st</sup> Floor	Incompressible CFD – Innovative Algorithms and Applications : Session III
Nambe'	W. 1 <sup>st</sup> Floor	Advances in Hydrocode Technology : Session III Hydro Methods
Navajo	W. 1 <sup>st</sup> Floor	Computational Modeling in Cardiovascular Mechanics : SessionI
Picuris	W. 1 <sup>st</sup> Floor	Discontinuous Galerkin Methods for Computational Mechanics : Session III Formulation and Analysis
Sandia	W. 1 <sup>st</sup> Floor	Physical and Computational Modeling of Biological Tissues Session III: Soft and Hard Tissue Mechanics
Santa Ana	W. 1 <sup>st</sup> Floor	Methods and Applications in Coupled Engineering Simulations : Session III
Santo Domingo	W. 1 <sup>st</sup> Floor	p- & hp Finite Elements and Boundary Element Methods : Session III
Taos	W. 1 <sup>st</sup> Floor	Computational Contact Mechanics : Session III
Tesuque	W. 1 <sup>st</sup> Floor	Inverse Problems : Session III
Zuni	W. 1 <sup>st</sup> Floor	A Memorial Minisymposium in Honor of Michael Crisfield : Session II
La Cienega	E. Upper level	Symposium on Crashworthiness & Impact Engineering : Session III
Mesilla	E. Upper level	Computational Geomechanics : Session I
Pecos	E. Upper level	Recent Advances in Functionally Graded Materials : Session III
Ruidoso	E. Upper level	Mechanism-Based Approaches to Fracture and Fatigue : Session II
San Miguel	E. Upper level	Computational Engineering Design Optimization : Session III
Tijeras	E. Upper level	Computational Issues in the Representation and Evaluation of Structure and Properties in the Plastic Response of Polycrystalline Materials : Session I
Aztec	E. Lower Level	4 <sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part I : Session III Hex Meshing I
Cimarron	E. Lower Level	Funding Opportunities in Computational Mechanics : Session I
Dona Ana	E. Lower Level	Multiscale Modeling and Simulation of Material Behavior : Session III
Galisteo	E. Lower Level	Terascale Optimal PDE Simulations: Algorithms and Applications : Session I
Ballroom A	W. 3 <sup>rd</sup> Floor	Symposium on Meshfree Methods: Part I : Session III Fluids II
Ballroom B	W. 3 <sup>rd</sup> Floor	Multiple-scale Analysis of Nanoscale Mechanics and Materials Session III Nanomechanics of Materials

MONDAY, JULY 28: 04:30 – 06:30				
Time 24 Min. Talks	Room: Acoma <b>Computational Simulation of Transport/Reaction Systems: Solution Algorithms and Applications</b> <b>Session III</b> Session Chairs: Derby, J., Pawlowski, R.	Room: Apache <b>Advances in Flow Simulation and Modeling</b> <b>Session III</b> Session Chair: Gartling, D.	Room: Cochiti <b>Numerical Methods and Modeling in Turbulence Simulation</b> <b>Session III</b> Session Chairs: Hughes, T., Mahesh, K.	Room: Isleta <b>Computational Micro- and Nano-Fluidics</b> <b>Session III</b> Session Chairs: Tafti, D., Debusschere, B.
04:30	A Discontinuous Galerkin Method for Equilibrium Air Flows Tu, S.* , Aliabadi, S.	Fluid-Structure Interaction Analysis of Human Heart by ALE Finite Element Method Hisada, T.* , Watanabe, H., Sugiura, S.	LES Modeling Within a Stabilized Finite Element Method Jansen, K.* , Tejada-Martinez, A.	KEYNOTE: Atomistic Simulation if a Wetting/DE-Wetting Flow
04:54	Accuracy of Fractional Step Methods for Differential Algebraic Equations (DAEs) Arising from Coupled Problems Vijalapura, P.* , Govindjee, S.	Simulation and Analysis of Parachute Soft-Landing Retraction Dynamics Stein, K.* , Tezduyar, T., Sathe, S., Benney, R.	Computational Methods for Shock-Driven Turbulence and LES of the Richtmyer-Meshkov Instability Pullin, D.* , Hill, D.	Freund, J.*
05:18	Large-Eddy Simulations of a Pool Fire with a Galerkin Least-Squares Finite-Element Method Smith, T.* , Shadid, J.	Modeling of Boundary Conditions for Hemodynamic Study of Cerebral Aneurysm Oshima, M.* , Sakai, H., Takagi, K.	A One-Dimensional Stochastic Synthetic-Field Turbulence Simulation Method Kerstein, A.* , Schmidt, R., Wunsch, S.	Analysis of Wall Adsorption of Analytes in Capillary Electrophoresis Ghosal, S.*
05:42	Multi Scale Numerical Simulation of Cooperative CVD Processes Markov, A.* , Sadiki, A.	Shear Layer Instability and Drag-Crisis for Flow Past a Cylinder Mittal, S.* , Singh, S.	Development of Coupled LES/ODT Turbulence Simulation Models Schmidt, R.* , Kerstein, A., McDermott, R., Wunsch, S.	Modeling of Electroosmotic Phenomenon for Transport in Micro/nano-fluidic Devices Dutta, P.*
06:06	Multiscale Modeling of Chemically Reactive Flows Powers, J.* , Paolucci, S., Singh, S., Rastgejev, Y.	Stabilized Parallel Finite Element Method for Orographic Wind Flow and Rainfall Using GIS Kashiyama, K.* , Shimizu, T.		Finite Element Simulation of Surface Tension Effects in a Heated Thin Fluid Layer Wang, X.* , Carey, G.

**MONDAY, JULY 28: 04:30 – 06:30**

Time 24 Min. Talks	Room: Jemez <b>Computational Methods on Nonmatching and Moving Grids</b> <b>Session III</b> Session Chairs: Wohlmuth, B., Ramm, E.	Room: Laguna <b>Incompressible CFD – Innovative Algorithms and Applications</b> <b>Session III</b> Session Chairs: Gartling, D., Martinez, M.	Room: Nambe' <b>Advances in Hydrocode Technology</b> <b>Session III</b> <b>Hydro Methods</b> Session Chairs: Anderson, R., Batra, R.	Room: Navajo <b>Computational Modeling in Cardiovascular Mechanics</b> <b>Session I</b> Session Chairs: Oshima, M., Holzapfel, G.
04:30	KEYNOTE: A Provably Second-Order Time-Accurate, Staggered, and Yet Subiteration-Free Algorithm for Transient Nonlinear Fluid-Structure Interaction Problems  Farhat, C.* , van der Zee, K., Geuzaine, P.	KEYNOTE: Parallel Finite Element Simulation of Incompressible Flows on the Cray X1  Aliabadi, S.* , Johnson, A.	On the Construction of Blending Elements for Enriched Finite Elements  Chessa, J., Belytschko T., Wang, H.*  An Artificial-Viscosity Method for the Lagrangian Analysis of Shocks in Solids with Strength on Unstructured, Arbitrary-Order Tetrahedral Meshes  Radovitzky, R.* , Lew, A., Ortiz, M.	Residual Stress is More Tractable Than Residual Strain in Models of the Heart and Vessels  Criscione, J.*
04:54				
05:18	A Dirichlet/Neumann Domain Decomposition Method for Incompressible Turbulent Flows on Overlapping Subdomains in Relative Motion  Codina, R.* , Houzeaux, G.	A Stabilized Finite Element Method for Stationary Flow Problems Using an Iterative Domain Decomposition Method  Kanayama, H.* , Shioya, R., Tagami, D., Kume, H.	A Cartesian Grid Method for Multimaterial Impact, Penetration, and Void Collapse  Tran, L.* , Udaykumar, H.S.	Hyperelastic and Viscoelastic FE Modeling of the Passive Embryonic Tubular Heart in Abaqus  Buttaccio, C.* , Becene, A., Perucchio, R.
05:42	Space Trees - Increasing the Potential of Cartesian Grids  Bungartz, H.*	Parallel Technique for Navier-Stokes Equations Based on the Iterative Space-Marching Method  Skurin, L.*	Solution Methods for Direct and Inverse Problems of Fractional Dispersion  Goloviznin, V.* , Kisilev, V., Korotkin, I., Semenov, V., Yurkov, Y.	FEA Techniques for Simulation of Stent Installation in Diseased Arteries  Reddy, S.* , Borgersen, S.
06:06	Accurate, Conservative Data Transfer Between Nonmatching Meshes in Multiphysics Simulations  Jiao, X.* , Heath, M.			Progress Towards Patient-Specific Computational Modeling of Balloon Angioplasty Using Magnetic Resonance Imaging  Holzapfel, G.* , Stadler, M., Auer, M.

**MONDAY, JULY 28: 04:30 – 06:30**

Time 24 Min. Talks	Room: Picuris  <b>Discontinuous Galerkin Methods for Computational Mechanics</b>  <b>Session III Formulation and Analysis</b>  Session Chairs: Cockburn, B., Tamma, K.	Room: Sandia  <b>Physical and Computational Modeling of Biological Tissues</b>  <b>Session III Soft and Hard Tissue Mechanics</b>  Session Chairs: Schroder, J., Gambarotta, L.	Room: Santa Ana  <b>Methods and Applications in Coupled Engineering Simulations</b>  <b>Session III</b>  Session Chairs: Parsons, D., Ferencz, R.	Room: Santo Domingo  <b>p- &amp; hp Finite Elements and Boundary Element Methods</b>  <b>Session III</b>  Session Chairs: Szabo, B., Rachowicz, W.
04:30	KEYNOTE:  Coupled Continuous and Discontinuous Finite Element Methods for the Shallow Water Equations	Ellipticity Questions in Soft-Tissue Engineering  Schroder, J.* , Neff, P.	Coupled Fluid-Structure Technique For Undersea Applications  Wardlaw, A.* , Luton, J., Renzi, J., Kiddy, K., McKeown, R.	A Posteriori Error Estimation and Superconvergence with Discontinuous Galerkin Methods for Hyperbolic Conservation Laws  Flaherty, J., Krivodonova, L.*
04:54	Dawson, C.*	Delamination Modelling of Biological Soft Tissues using PUFEM  Gasser, T.* , Holzapfel, G.	Coupled Simulations of Convective Burning of Stationary and Propagating Cracks in an Energetic Material  Massa, L.* , Hwang, C., Geubelle, P., Fiedler, R.	Simple Algebraic Coarse Grid Based Preconditioner for Adaptive hp Schemes  Bauer, A., Patra, A.*
05:18	The Discontinuous Petrov-Galerkin Finite Element Method: Error Analysis and Computer Implementation  Causin, P.* , Sacco, R.	Modelling Kidney-Tissue Damage in Shock-Wave Lithotripsy  Weinberg, K.* , Colonius, T., Ortiz, M.	Finite and Infinite Element Methods for Undex Simulations  Cipolla, J., Nagtegaal, J.*	Flexible hp- Discontinuous Galerkin Methods  Adjerid, S., Massey, T.*
05:42	Superconvergence and Error Analysis for the hp-Discontinuous Finite Element Method  Adjerid, A.* , Klauser, A., Massey, T.	Micro-Mechanical Finite Element Analysis of Human Bone  Bayraktar, H.* , Adams, M., Papadopoulos, P., Keaveny, T.	Toner Particle Transfer Resulting from Alternating Electric Fields  Hoffmann, R.* , Wachutka, G.	Hierarchical Error Estimation for Elliptic and Parabolic Equations in Two and Three Space Dimensions  Moore, P.*
06:06	Analysis of a Spacetime Discontinuous Galerkin Method for Systems of Conservation Laws  Jegdic, K.* , Jerrard, R., Haber, R.	Modeling Deformation-Induced Fluid Flow in the Canicular-Lacunar System of Cortical Bone  Swan, C.* , Brand, R., Lakes, R.	Calculation of Stress and Strain in Metal Casting Operations  Korzekwa, D.* , Turner, J.	Meshes for Characteristic Length Scales  Hakula, H. *

**MONDAY, JULY 28: 04:30 – 06:30**

Time 24 Min. Talks	Room: Taos <b>Computational Contact Mechanics</b> <b>Session III</b>  Session Chairs: Heinstein, M., Mitchell, J.	Room: Tesuque <b>Inverse Problems</b> <b>Session III</b>  Session Chairs: Feijoo, G., Barbone, P.	Room: Zuni <b>A Memorial Minisymposium in Honor of Michael Crisfield</b> <b>Session II</b>  Session Chairs: Taylor, R., Govindjee, S.	Room: La Cienega <b>Symposium on Crashworthiness &amp; Impact Engineering</b> <b>Session III</b>  Session Chairs: Hoof, J., Neal, M.
04:30	A New Approach to Optimal Shape Design of Frictional Contact Problems Using Variational Inequalities  Al-Dojayli, M.* , Meguid, S., Czekanski, A.	Elastodynamic Identification of Subterranean Objects via The Linear Sampling Method  Fata, S.* , Guzina, B.	Computing Bounds for Functional Outputs of Exact Solutions of PDE's  Peraire, J.*	An Efficient Algorithm For Detecting Interfering Quadrilaterals  Lin, J.*
04:54	3-D Contact Algorithm for Thermomechanical Analyses of Casting Processes  Haas, L.* , Laschet, G.	Engineering the Pupil Phase to Improve the Quality of Digitally Restored Images  Prasad, S.* , Pauca, V., Plemons, R., Torgersen, T., Van der Gracht, J.	Transient Impact of Shells Based on a Three-Dimensional Formulation  Ramm, E.* , Gee, M., Özdemir, I., Wall, W.A.	Front Structure Design Procedure For Optimal Pedestrian Leg Impact Performance  Neal, M.*
05:18	On the Interaction of Frictional Sliding Conditions with Bifurcation Phenomena in Hyperelastic Steady State Rolling Calculations  Stanculescu, I.* , Laursen, T.	On the Reconstruction of Motion of Structures From Their Time Average Laser Holograms  Ragulskis, M.*	Loss of Hyperbolicity and Crack Growth  Belytschko, T.* , Chen, H.	Finite Element Contact-Impact Performance Analysis With Shell Structures  Silva, E., Quaranta, F., Alves, J.*
05:42	An Efficient Model For Simulating Rolling Contact Between Tire and Ground During Sideslip  Mousseau, C.* , Harbour, R.	Initial Shape Determination of Largely Deformed Elastic Membrane  Yamada, T.*	The Influence of the Energy-Momentum Paradigm on the Development of Computational Contact Mechanics  Laursen, T.*	A Mesh Independent Spot Weld Capability For Crashworthiness  Engelmann, B.* , Deb, A., Wohlever, C.
06:06			An Enhanced Element Formulation for Large Elastic Deformations using Biot Stresses  Wriggers, P.* , Crisfield, M.	Transient Response Of Projectile In Gun-Launch Simulation Using Crushable Al Honeycomb Mitigator  Chowdhury, M.* , Tabiei, A.

**MONDAY, JULY 28: 04:30 – 06:30**

Time 24 Min. Talks	Room: Mesilla <b>Computational Geomechanics</b> <b>Session I</b>  Session Chairs: Hashash, Y., William, K.	Room: Pecos <b>Recent Advances in Functionally Graded Materials</b> <b>Session III</b>  Session Chairs: Sun, L., Bobaru, F.	Room: Ruidoso <b>Mechanism-Based Approaches to Fracture and Fatigue</b> <b>Session II</b>  Session Chairs: Seigmund, T., Ravi-Chandar, K.	Room: San Miguel <b>Computational Engineering Design Optimization</b> <b>Session III</b>  Session Chairs: Giunta, A.
04:30	KEYNOTE:  Interface Analysis of Cohesive-Frictional Materials  William, K.* , Rhee, I., Shing, B.	Design of Functionally Graded Composites for Strength and Stiffness  Lipton, R., Stuebner, M.*  Adaptive Multiscale Analysis of Functionally Graded Materials  Vemaganti, K., Deshmukh, P.*	KEYNOTE:  A Computational Model for Ballistic Penetration of Multi-Layered Ceramic Targets – Achieving True Predictive Capabilities  Espinosa, H.* , Gailly, B.	Developing a Computationally Efficient Dynamic Multilevel Hybrid Optimization Scheme using Multifidelity Model Interactions  Castro, J.* , Demmie, P., Giunta, A., Gonzales, M., Hough, P.  Development of a Multidisciplinary Optimization Software for MEMS structures, DS/MEMS  Kwak, B., Huh, J.* , Lee, S.
04:54	Parallel Finite Element Analysis Platform for the Solid Earth Problems: GeoFEM  Okuda, H.* , Yagawa, G., Nakamura, H.	Meshfree Method In Optimal Design Of Functionally Graded Materials  Bobaru, F.* , Jiang, H.	Dynamic Crack Propagation under Shear Loading  Ravi-Chandar, K.*	Analytical Sensitivity Analysis of Geometrically Nonlinear Structures Utilizing the Co-rotational Finite Element Method  Pajot, J.* , Maute, K.
05:18	Development of Strong Ground Motion Simulation System Based on Multi-Scale Analysis and Geographical Information System  Hori, M., Ichimura, T.*	Mixed-mode Crack Propagation in Functionally Graded Materials  Kim, J.* , Paulino, G.	Mesoscale Simulations of Dynamic Fragmentation of Ceramic Bars  Maiti, S.* , Geubelle, P.	Domain Decomposition Based Two-Level Newton Scheme for Non-linear Problems  Kulkarni, D.* , Tortorelli, D.
05:42	Visual Representation of Material Stiffness and Stress-Strain Behavior in Geomechanics Modeling  Wotring, D.* , Hashash, Y.		A Computational Approach for Three-Dimensional Simulation of Discrete Concrete Cracking  Paz, C., Alves, J.* , Ebecken, N., Martha, L., Coutinho, A.	Shape Optimization Technique Using Mesh Superposition Method  Sando, A.* , Suzuki, K., Ohtsubo, H.
06:06				

**MONDAY, JULY 28: 04:30 – 06:30**

Time 24 Min. Talks	Room: Tijeras <b>Computational Issues in the Representation and Evaluation of Structure and Properties in the Plastic Response of Polycrystalline Materials</b> <b>Session I</b> Session Chairs: Zabaras, N., Dawson, P.	Room: Aztec <b>4<sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part I</b> <b>Session III</b> <b>Hex Meshing I</b> Session Chairs: Borden, M., Shepard, M.	Room: Cimarron <b>Funding Opportunities in Computational Mechanics</b> <b>Session I</b> Session Chairs: Belytschko, T., Fish, J.	Room: Dona Ana <b>Multiscale Modeling and Simulation of Material Behavior</b> <b>Session III</b> Session Chairs: Ortiz, M., Falk, M.
04:30	Effect of Finite Element Discretization on Texture Predictions Using Mesoscale Simulations of Deformation and Recrystallization  Sarma, G.*, Radhakrishnan, B.	A Survey of Hex Mesh Modification Techniques: Where We Are and Where We Are Going  Borden, M.*, Shepherd, J.	Mechanics & Materials Program, Engineering Directorate, National Science Foundation  Chong, K.*	Evolution of Deformation-Induced Microstructures  Aubry, S.*, Hughes, D.
04:54	Understanding of Geometric Constraint Effects in Plasticity Modeling of Two-Phase Ni-Base Single Crystals  Choi, Y.*, Parthasarathy, T., Dimiduk, D., Uchic, M.	Sculpting: An Improved Grid-based Algorithm for all Hexahedral Meshing  Walton, K.*, Benzley, S., Shepherd, J.	Aerospace and Materials Sciences, Air Force Office of Scientific Research  Jones, W.*	Binding Energy of Parallel Carbon Nanotubes  Chen, B., Gao, M.*, Zuo, J., Huang, Y., Qu, S.
05:18	Using a Nonlocal Crystal Plasticity to Model Material Response  Marin, E.*, Bammann, D.	Enhancements and Applications of the Graft Tool  Earp, M.*, Benzley, S., Shepherd, J., Borden, M.	Structural Mechanics Program, Office of Naval Research  Barsoum, R.*	A Silent Boundary Method with the MPM for Simulating Film Delamination  Shen, L.*, Chen, Z.
05:42	Nonlocal Plasticity Model with Strict Anti-Plane Shear Kinematics: Formulation and Variational Equations  Regueiro, R.*	Hexahedral Adaptive Mesh Generation Using Fuzzy Logic and Local Refinement  Wada, Y.*, Matsumoto, M., Kikuchi, M.	Sandia/NSF Joint Research Program in Engineering Sciences  Morgan, H.*	Atomistic and Continuum Studies of Crack-Like Diffusion Wedges and Dislocations in Submicron Thin Films  Buehler, M.*, Gao, H.
06:06		Interior Node Placement in Sweeping  Scott, M.*, Vyas, V., Owen, S., White, D., Stephenson, M.		Phase-Field Simulations of the Microstructural Development During Directional Solidification in a Channel  Takaki, T.*, Fukuoka, T., Tomita, Y.

**MONDAY, JULY 28: 04:30 – 06:30**

Time 24 Min. Talks	Room: Galisteo <b>Terascale Optimal PDE Simulations: Algorithms and Applications</b> <b>Session I</b> Session Chairs: Keyes, D., Cai, X.	Room: Ballroom A <b>Symposium on Meshfree Methods: Part I</b> <b>Session III Fluids II</b> Session Chairs: Li, S., Lee, S.	Room: Ballroom B <b>Multiple-scale Analysis of Nanoscale Mechanics and Materials</b> <b>Session III Nanomechanics of Materials</b> Session Chairs: Peng, Z., Arroyo, M.	
04:30	Dual-Primal FETI Algorithms for Linear Elasticity  Widlund, O.*	KEYNOTE:  Multilevel Particle-Partition of Unity Methods  Griebel, M., Schweitzer, M.*	Scalable Molecular Dynamics Methods for Reactive Force Fields  Aidun, J., Thompson, A.*	
04:54	Balancing Domain Decomposition Solver for Complex Models over Millions of DOFs  Ogino, M.* , Shioya, R., Kanayama, H., Tagami, D.		Parameter Link as an Approach to Hierarchical Modelling of Toughness Decrease of Steels  Schmauder, S.* , Weber, U., Binkele, P., Kizler, P.	
05:18	Towards a Black-Box Multigrid with Smoothed Aggregation Method  Brezina, M.* , Falgout, R., MacLachlan, S., Manteuffel, T., McCormick, S., Ruge, J.	Free Surface Flow Simulations by SPH Techniques  Cueto-Felgueroso, L., Mosqueira, G., Colominas, I., Navarrina, F., Casteleiro, M.*	Modeling of Microstructural Evolution through Deformation Banding During Equal Channel Angular Extrusion (ECAP)  Mahesh, S.* , Beyerlein, I., Tome, C.	
05:42	A Parallel Nonlinear Additive Schwarz Preconditioned Inexact Newton Algorithm for Incompressible Navier-Stokes Equations  Hwang, F.* , Cai, X.	Point Collocation Schemes for Fluid Problems by the Fast Moving Least Square Reproducing Kernel Method  Kim, Y.* , Kim, D.	Molecular Dynamics Simulations of the Tensile Deformation of CU Nanowires  Liang, W.* , Zhou, M.	
06:06	A Parallel Full SQP Lagrange-Newton-Krylov-Schwarz Method for Flow Control Problems  Predencio, E.* , Cai, X.	Meshfree Strong-Weak Form (MSW) Method and Its Application to Incompressible Flow Problems  Wu, Y., Liu, G.*	Atomistic Simulations of Bauschinger Effects of Metals with High Angle and Low Angle Grain Boundaries  Fang, H.* , Horstemeyer, M., Baskes, M., Solanki, K.	

**Tuesday, July 29  
8:30 – 9:15 AM**

**Plenary Lecture 4**

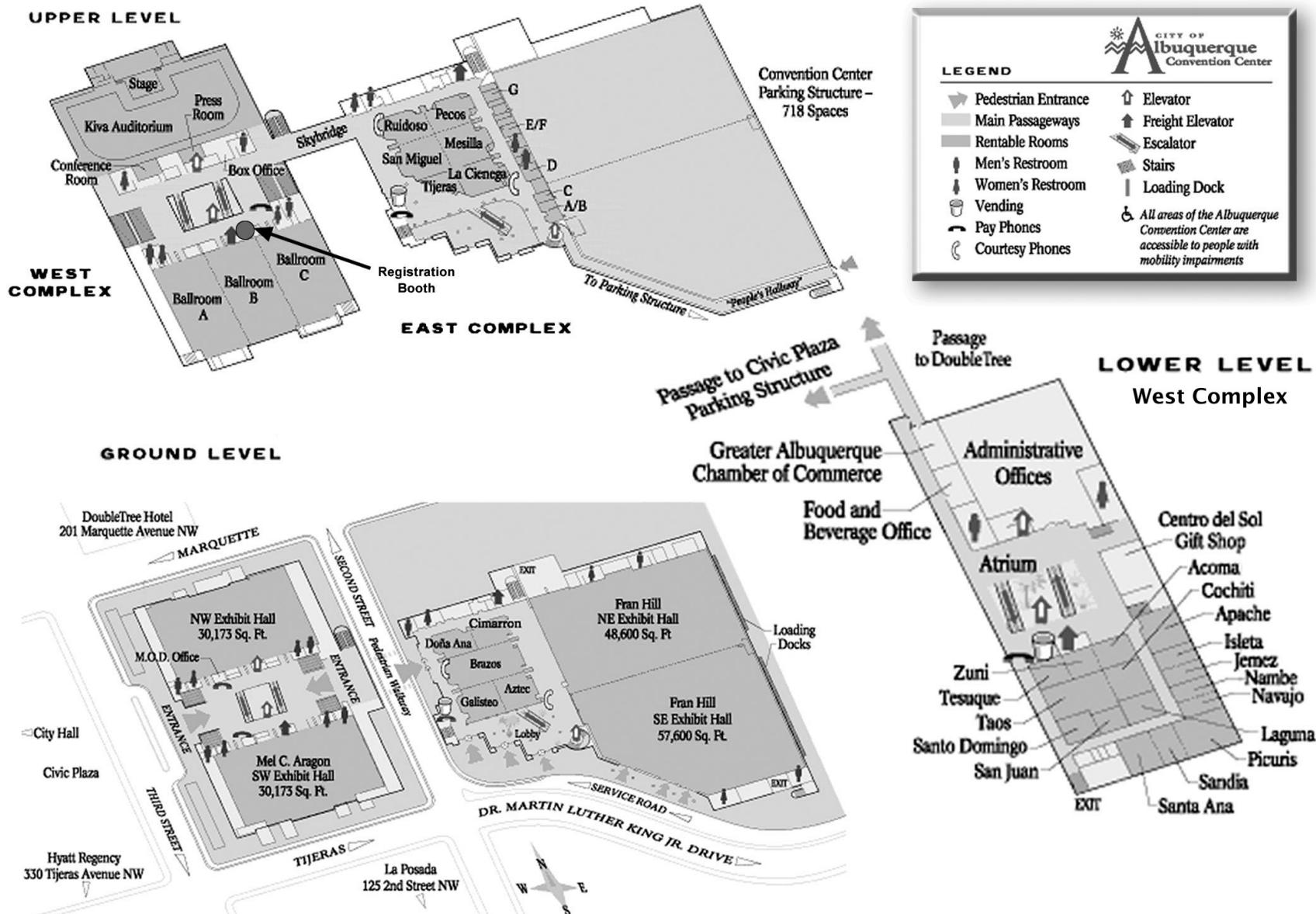
**Kiva Auditorium**



***Investigating Materials Failure Using Lots of Atoms and Big Computers***

**Farid Abraham  
IBM Almaden Research Center**

# Albuquerque Convention Center Map



TUESDAY, JULY 29: 9:45 – 11:45 AM		
Room	Location	Technical Session Title
Acoma	W. 1 <sup>st</sup> Floor	A Minisymposium on Immersed Boundary and Fictitious Domain Methods : Session I
Apache	W. 1 <sup>st</sup> Floor	Advances in Flow Simulation and Modeling : Session IV
Cochiti	W. 1 <sup>st</sup> Floor	Computational Fluid Mechanics for Free and Moving Boundaries : Session I
Isleta	W. 1 <sup>st</sup> Floor	
Jemez	W. 1 <sup>st</sup> Floor	Computational Methods on Nonmatching and Moving Grids : Session IV
Laguna	W. 1 <sup>st</sup> Floor	Incompressible CFD – Innovative Algorithms and Applications : Session IV
Nambe'	W. 1 <sup>st</sup> Floor	Advances in Hydrocode Technology : Session IV Methods and Applications for MHD
Navajo	W. 1 <sup>st</sup> Floor	Computational Modeling in Cardiovascular Mechanics : Session II
Picuris	W. 1 <sup>st</sup> Floor	Discontinuous Galerkin Methods for Computational Mechanics : Session IV Wave Propagation
Sandia	W. 1 <sup>st</sup> Floor	
Santa Ana	W. 1 <sup>st</sup> Floor	Methods and Applications in Coupled Engineering Simulations : Session IV
Santo Domingo	W. 1 <sup>st</sup> Floor	p- & hp Finite Elements and Boundary Element Methods : SessionIV
Taos	W. 1 <sup>st</sup> Floor	Computational Contact Mechanics : Session IV
Tesuque	W. 1 <sup>st</sup> Floor	Inverse Problems : Session IV
Zuni	W. 1 <sup>st</sup> Floor	Identification and Validation of Computational Models : Session I
La Cienega	E. Upper level	Symposium on Crashworthiness & Impact Engineering : Session IV
Mesilla	E. Upper level	Computational Geomechanics : Session II
Pecos	E. Upper level	Fundamentals and Applications of Cohesive Models : Session I
Ruidoso	E. Upper level	Mechanism-Based Approaches to Fracture and Fatigue : Session III
San Miguel	E. Upper level	Structural Optimization - Multiphysics Problems in Shape and Topology Design Session I Multiphysics and Reliability Design
Tijeras	E. Upper level	Computational Issues in the Representation and Evaluation of Structure and Properties in the Plastic Response of Polycrystalline Materials : Session II
Aztec	E. Lower Level	4 <sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part I : Session IV Mesh Optimization II
Cimarron	E. Lower Level	Recent Developments in Multiscale Modeling : Session I
Dona Ana	E. Lower Level	Multiscale Modeling and Simulation of Material Behavior : Session IV
Galisteo	E. Lower Level	4 <sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part II : Session I Design to Analysis
Ballroom A	W. 3 <sup>rd</sup> Floor	Symposium on Meshfree Methods: Part I : Session IV Mathematics
Ballroom B	W. 3 <sup>rd</sup> Floor	Multiple-scale Analysis of Nanoscale Mechanics and Materials Session IV Mechanics of Nanowires and Nanotubes

TUESDAY, JULY 29: 9:45 – 11:45 AM				
Time 24 Min. Talks	Room: Acoma <b>A Minisymposium on Immersed Boundary and Fictitious Domain Methods</b> <b>Session I</b> Session Chairs: Patankar, N., Michaelides, E.	Room: Apache <b>Advances in Flow Simulation and Modeling</b> <b>Session IV</b> Session Chair: Akin, E.	Room: Cochiti <b>Computational Fluid Mechanics for Free and Moving Boundaries</b> <b>Session I</b> Session Chairs: Baer, T., Kothe, D.	Room: Isleta None at this time
09:45	CFD Based on Fluctuating Fluid Dynamics for Sub-Micron/Nanoscale Applications  Patankar, N., Podariu, S.*, Sharma, N.	KEYNOTE:  Soroban Grid for Higher Order Scheme CIP	Fluid-Structure Interactions Using a Sharp-interface Method  Marella, S.*, Garvin, J., Jeffrey, B., Udaykumar, H.	
10:09	A Fictitious Domain Method with Distributed Lagrange Multiplier for Particulate Flows  Nagai, M.*, Kawahara, M.	Yabe, T.*, Takizawa, K., Mizoe, H.	A Sharp-Interface Numerical Model for Dendritic Solidification With Convection  Zhao, P.*, Heinrich, J.	
10:33	An Approach for Reducing the Errors in the Ficititous Domain Method  Benard, A.*, Li, Y., Diaz, A., Dendy, E.	Lagrangian Formulation of the Fluid Mechanic Problems Including Free-Surface and Breaking Waves  Idelsohn, S.*, Del Pin, F., Calvo, N., Oñate, E.	The Extended Finite Element Method for Two-Phase Flow  Chessa, J.*, Belytschko, T.	
10:57	A New Approach to Treat the Solid-Fluid Boundary Conditions in Lattice Boltzmann Method  Feng, Z., Wang, X., Michaelides, E.*	Numerical Simulation of Moving Interface Problems with the ETILT  Cruchaga, M.*, Celentano, D., Tezduyar, T.	A Hybrid Ghost Fluid - Extended Finite Element Method  Noble, D.*, Baer, T., Rao, R., Schunk, P.	
11:21	Modeling a Bent Twisted Filament Immersed in Fluid  Ferent, A.*, Peskin, C., Wang, X.	Implicit Multigrid Computations of Unsteady Multiphase Flows  Muradoglu, M.*		

TUESDAY, JULY 29: 9:45 – 11:45 AM				
Time 24 Min. Talks	Room: Jemez <b>Computational Methods on Nonmatching and Moving Grids</b> <b>Session IV</b> Session Chairs: Felippa, C., Bischoff, M.	Room: Laguna <b>Incompressible CFD – Innovative Algorithms and Applications</b> <b>Session IV</b> Session Chairs: Martinez, M., Gartling, D.	Room: Nambe'’ <b>Advances in Hydrocode Technology</b> <b>Session IV</b> <b>Methods and Applications for MHD</b> Session Chairs: Christon, M., Benson, D.	Room: Navajo <b>Computational Modeling in Cardiovascular Mechanics</b> <b>Session II</b> Session Chairs: Gasser, T., Reddy, S.
09:45	Advanced Mesh Update Methods for Fluid-Object and Fluid-Structure Interactions Tezduyar, T., Stein, K.*	A Galerkin Formulation of the Generalized Helmholtz Decomposition for Vorticity Methods Ingber, M.*	Numerical Algorithms for Magnetohydrodynamics of Free Surface Multifluid Systems Samulyak, R.*, Oh, W., Glimm, J.	A New Formulation for Modeling Blood Flow in Deformable Arteries: The Coupled Momentum Method for Fluid-Solid Interaction Problems Figueroa, A.*, Jansen, K., Hughes, T., Taylor, C.
10:09	Aspects of Finite Element Strategies for Large Deformation Problems on Moving Meshes Peric, D.*, Dettmer, W.	Grid-Based Poisson Solver with Boundary Conditions Obtained Using the Fast Multipole Method: an Optimal Combination for Vortex-in-Cell Methods Daeninck, G., Cooley, R., Winckelmans, G.*	Three-Dimensional Magnetohydrodynamic (MHD) Modeling for Z-pinch Applications Robinson, A.*	A Numerical Fluid-Structure Interaction Analysis of Cerebral Aneurysm Torii, R.*, Oshima, M., Kobayashi, T., Takagi, K.
10:33	Computational Mesh Moving Schemes for ALE-Based Fluid Structure Interaction Simulations Wall, W.*, Kuettler, C., Ramm, E.	Capillary Collapse and Pinchoff of a Soap-Film Bridge Nitsche, M.*, Steen, P.,	ALEGRA-HEDP Three-dimensional Simulations of Z-pinch Applications Garasi, C.*	A Structural Model for Arterial Walls Incorporating the Statistical Distribution of Collagen Fiber Directions Cacho, F.*, Holzapfel, G.
10:57	A New Simple Spring Method for Three-Dimensional Unstructured Dynamic Meshes Bottasso, C., Detomi, D.*	A Numerical Study of Drop Deformation and Breakup in Shear Flow for Viscoelastic Fluids Phelan Jr., F.*, Dutton, T.		A Computational Experiment in Mesocirculation of Blood Karam, J.*
11:21	The Extended Delaunay Tesselation for Moving Grids in Lagrangian Flows Idelsohn, S., Calvo, N.*, Oñate, E.	A Numerical Investigation of Benard Convection in Small Aspect Ratio Containers Peterson, J.*, Kirk, B.		

**TUESDAY, JULY 29: 9:45 – 11:45 AM**

Time 24 Min. Talks	Room: Picuris <b>Discontinuous Galerkin Methods for Computational Mechanics</b>  <b>Session IV Wave Propagation</b>  Session Chairs: Flaherty, J., Aizinger, V.	Room: Sandia  <b>None at this time</b>	Room: Santa Ana  <b>Methods and Applications in Coupled Engineering Simulations</b>  <b>Session IV</b>  Session Chairs: Parsons, D., Hoover, C.	Room: Santo Domingo  <b>p- &amp; hp Finite Elements and Boundary Element Methods</b>  <b>Session IV</b>  Session Chairs: Devloo, P., Yosibash, Z.
09:45	A Local Discontinuous Galerkin Formulation for the Class of Elastic Wave Propagation Problems  Kanapady, R.* , Srinivasan, S., Sandhu, S., Tamma, K., Cockburn, B.		KEYNOTE:  DIABLO: Scalable Implicit FEA at LLNL	Optimal Extension Operators for High Order Tetrahedral Elements  Becirovic, A., Gaisbauer, R., Schoeberl, J.*
10:09	A Spacetime Discontinuous Galerkin Method for Elastodynamics with Element-Level Momentum Balance  Haber, R.* , Petracovici, B., Abedi, R., Jerrard, R.		Ferencz, R.* , Havstad, M., Parsons, D., Castillo, V., Solberg, J.	Data Fitting and Shape Approximation with CHARMS  Zhu, B.* , Krysl, P.
10:33	Shell Wave Propagation and Adaptive Analysis  Aubry, D.* , Tie, B.		Fully Coupled Simulations of Dynamics of Porous Media Using a Finite Element Framework  Taylor, L.* , Muraleetharan, K.	Geometry Modeling and Mesh Generation for hp Finite Element Methods  Xue, D.* , Demkowicz, L.
10:57	Discontinuous Galerkin Method for Nonlinear Dispersive Equations  Levy, D., Shu, C., Yan, J.*		Strongly Coupled 3-D Finite Element Formulation for Modeling Microdevices with Dominant Fringing Fields  Avdeev, I.* , Gyimesi, M., Lovell, M., Onipede, D.	On High Order Curved Elements  Gaisbauer, R.* , Schoeberl, J.
11:21	Remarks on Irregular Hexahedral Finite Elements  Falk, R.* , Monk, P.		Data Driven Aspects of an Architecture for a Multiphysics Applications Environment  Michopoulos, J.* , Tsompanopoulou, P., Houstis, E., Lesoinne, M., Lechenault, F., Farhat, C., Rice, J.	Multilevel hp Finite Element Methods  Zumbusch, G.*

**TUESDAY, JULY 29: 9:45 – 11:45 AM**

Time 24 Min. Talks	Room: Taos <b>Computational Contact Mechanics</b> <b>Session IV</b>  Session Chairs: Heinstein, M., Mitchell, J.	Room: Tesuque <b>Inverse Problems</b> <b>Session IV</b>  Session Chairs: Barbone, P., Oberai, A.	Room: Zuni <b>Identification and Validation of Computational Models</b> <b>Session I</b>  Session Chairs: Ghanem, R., Allix, O.	Room: La Cienega <b>Symposium on Crashworthiness &amp; Impact Engineering</b> <b>Session IV</b>  Session Chairs: Deng, B., Chow, C.
09:45	Numerical Simulation of 3D Contact Problems Under Finite Elastic-Plastic Deformation  Bandeira, A.*, de Mattos Pimenta, P., Wriggers, P.	KEYNOTE:  Some Inverse Problems In Biomedical Imaging  Greenleaf, J.*	KEYNOTE:  Constitutive Relation Error for Dynamics Model Validation with Uncertainties  Ladeveze, P.* , Deraemaeker, A.	Analysis Of Polymeric Components Under Impact Loading  Wei, Y., Jie, M., Argento, A., Chow, C.*, Godlewski, T., Gonzalez-Ronda, L., Mielewski, D.  Water And Soft-Soil Impact Testing And Simulation  Fasanella, E.* , Jackson, K.
10:09	Elasto-Plastic Contact of Fractal Surfaces  Willner, K.* , Gaul, L.			
10:33	Development of Theory and Numerical Procedures for Estimating of Properties of Contact that Influence Friction-Induced Vibration and Noise  Abdo, J.*	Well-Posedness Of An Elastic Inverse Problem Arising In Medical Imaging  Barbone, P.*	The Role of Uncertainty Quantification in the Structural Dynamics Model Validation  Red-Horse, J., Paez, T.* , Ghanem, R.	The Effect Of Lumped Mass Matrix In Explicit FEM  Wu, S.* , Gu, L.
10:57	A New Elastoplastic Tangential Force-Displacement Model for Contacting Particles in Granular Flow Simulations  Vu-Quoc, L.* , Zhang, X., Lesburg, L.	Estimating Endocardial (Heart Surface) Potentials From a Noncontact Probe  Olson, L.* , Throne, R., Windle, J.	A Discussion of Sensitivity Analysis for the Identification of Poroelastic Material Parameters  Constantinescu, A.* , Lecampion, B.	Assessment Of Humos Using Volunteer Tests  Deng, B.* , Wang, J., Slaats, P.
11:21		Sparse Data Assimilation in Brain Deformation Modeling  Lunn, K.* , Paulsen, K., Kennedy, F., Roberts, D., Hartov, A.	Identification Issues for Dynamic Tests Involving Damage and Localization  Allix, O.* , Feissel, P., Thevenet, P.	Failure Modelling In LS-DYNA For Crash Applications  Munz, T.* , Schweizerhof, K., Haufe, A., Hallquist, J.

**TUESDAY, JULY 29: 9:45 – 11:45 AM**

Time 24 Min. Talks	Room: Mesilla <b>Computational Geomechanics</b> <b>Session II</b>  Session Chairs: Manzari, M., Jensen,N.	Room: Pecos <b>Fundamentals and Applications of Cohesive Models</b>  Session I	Room: Ruidoso <b>Mechanism-Based Approaches to Fracture and Fatigue</b>  Session III	Room: San Miguel <b>Structural Optimization - Multiphysics Problems in Shape and Topology Design</b>  <b>Session I</b> <b>Multiphysics and Reliability Design</b>  Session Chair: Bendsoe, M.
09:45	KEYNOTE:  Analysis of Deformation Bands in Geomaterials Using Three-Invariant Elastoplastic Constitutive Models	KEYNOTE:  Use of Cohesive Zone Models for Grain Boundary Decohesion and Intragranular Cracking in Metallic Polycrystals	A Thermomechanical Cohesive Zone Model for Bridged Delamination Cracks  Hattiangadi, A., Siegmund, T.*	KEYNOTE:  Topology Optimization in Wave- Propagation Problems
10:09	Borja, R.*, Sama, K.	Iesulauro, E., Gaya, J., Heber, G., Wawrzynek, P., Ingraffea, A.*	Voronoi Cell FEM-Based Damage Modeling in Particle Reinforced MMC'S  Ghosh, S., Chao, H., Moorthy, S.*	Sigmund, O.*, Jensen, J.
10:33	A Variational Formulation of Distributed Damage in Brittle Materials  Pandolfi, A.*, Ortiz, M.	Towards Full Multiscale Modelling of Fracture: A Numerical Simulation of Hydrogen Embrittlement  Serebrinsky, S.*, Carter, E., Ortiz, M.	A Superposition Framework for Discrete Dislocation Plasticity  O'Day, M.*, Curtin, W.	Miniaturized Broadband Antenna Design Via SIMP  Kiziltas, G.*, Kikuchi, N., Volakis, J.
10:57	Modeling of Fiber-Reinforced Composite Materials with Interphases  Mogilevskaya, S.*, Crouch, S.	Atomistically-Informed Cohesive Zone Laws: A Methodology for Linking Chemical Bonding With Plasticity  Gullickson, J.*, Zavattieri, P., Hector Jr., L., Bower, A., Needleman, A.	Fracture Analysis Based on a Strain Gradient Plasticity Theory Without the Higher-Order Stress  Qu, S.*, Huang, Y., Beaudoin, A., Hwang, K., Li, M., Liu, C.	Shape Optimization of Heat-Resistant Structures  Diaz, A.*, Benard, A.
11:21	Numerical Modeling of Earthquake- Induced Permanent Deformations in Saturated Granular Soils  Manzari, M.*	Finite Deformation of Shear Cracks: Continuum Analysis Incorporating the Harmonic Interatomic Potential  Chen, B.*, Huang, Y., Gao, H., Wu, P.	A Mechanism-Based Thermomechanical Cohesive Zone Approach for Modeling Ductile Fracture  Klein, P.*, Bammann, D., McFadden, S., Antoun, B., Foulk, J.	Recent Experience with Approximate Reliability-Based Optimization Methods  Yang, R.*, Gu, L.

**TUESDAY, JULY 29: 9:45 – 11:45 AM**

Time 24 Min. Talks	Room: Tijeras <b>Computational Issues in the Representation and Evaluation of Structure and Properties in the Plastic Response of Polycrystalline Materials</b> <b>Session II</b> Session Chairs: Garmestani, H., Bamann, D.	Room: Aztec <b>4<sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part I</b> <b>Session IV</b> <b>Mesh Optimization II</b> Session Chairs: Knupp, P., Owen S.	Room: Cimarron <b>Recent Developments in Multiscale Modeling</b> <b>Session I</b> Session Chairs: Moes, N., Ghosh, S.	Room: Dona Ana <b>Multiscale Modeling and Simulation of Material Behavior</b> <b>Session IV</b> Session Chairs: Radovitzky, R., Aubry, S.
09:45	Surface Roughening in Aluminum Alloys Turner, T.* , Miller, M.	Optimization of Tetrahedral and Hexahedral Mesh Quality Dyadechko, V.* , Garimella, R., Shashkov, M.	KEYNOTE: A Multiscale Computational Strategy with Time-Space Homogenization Ladeveze, P.* , Nouy, A.	KEYNOTE: Multiscale Modeling of Ductile Materials Radovitzky, R., Cuitino, A., Ortiz, M.
10:09	Computational Modeling of Creep and Deformation in Ti-Al Alloys Joseph, D., Hasija, V., Zhuang, S., Ghosh, S.*	Polygonal Surface Mesh Quality Improvement Garimella, R.* , Shashkov, M.		
10:33	Elasto-Viscoplastic Finite Element Analysis of Polycrystals Maniatty, A.* , Matou_, K., Bandar, A., Claves, S., Misolek, W.	Adaptive Mesh Optimization Using Algebraic Mesh Quality Metrics Chand, K.*	Space-Time Multiscale-Multiphysics Computational Techniques Fish, J.*	Simulations of Stress Induced Grain Boundary Motion Battaile, C.* , Holm, E.
10:57	Relating Strain Hardening to Dislocations Density Via Broadening of Bragg Peaks During Plastic Deformation Dawson, P.* , Sidle, B., Boyce, D.	A Framework for Mesh Quality Improvement Knupp, P.* , Freitag-Diachin, L., Brewer, M.	Multi-Scale Aanalysis of Elasto-Viscoplastic Polycrystals Matous, K.* , Maniatty, A.	Plastic Deformation Associated with Void Growth: Multiscale Modeling Rudd, R.* , Seppala, E., Belak, J.
11:21				

**TUESDAY, JULY 29: 9:45 – 11:45 AM**

Time 24 Min. Talks	Room: Galisteo <b>4<sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part II</b> <b>Session I</b> <b>Design to Analysis</b>  Session Chairs: Burns, S., Owen, S.	Room: Ballroom A <b>Symposium on Meshfree Methods: Part I</b>  <b>Session IV</b> <b>Mathematics</b>  Session Chairs: Yagawa, G., Rabczuk, T.	Room: Ballroom B <b>Multiple-scale Analysis of Nanoscale Mechanics and Materials</b>  <b>Session IV</b> <b>Mechanics of Nanowires and Nanotubes</b>  Session Chairs: Schumauder, S., Min, Z.	
09:45	Reliability of Mesh Generation Software  ElSheikh, A.* , Smith, S., Chidiac, S.	KEYNOTE:  Minimal C <sup>n</sup> Conforming Meshfree-FEM Hermite Hierarchy  Li, S.*	A Multiscale Meshfree Method for the Analysis of Nanoscale Materials  Qian, D.* , Liu, W.	
10:09	Structured and Semi-Structured Mesh Storage  Tautges, T.* , Merkley, K.		Molecular Dynamics Simulations of the Elastic Modulus of Polymer-Carbon Nanotube Composites  Griebel, M., Hamaekers, J.*	
10:33	A Comparison of Techniques for Geometry Access Related to Mesh Generation  Beall, M., Walsh, J.* , Shephard, M.	Approximation by Particle Shape Functions Associated with General (Non-Uniformly Distributed) Particles in R <sup>n</sup>  Babuska, I., Banerjee, U., Osborn, J.*	Using Strain to Design Nanostructures  Kukta, R., Kouris, D.*	
10:57	DDV, A Tool for Geometry Extraction from Image Data  Fowler, J.* , Trease, H.	Superconvergence in Meshfree Methods  Babuska, I., Banerjee, U.* , Osborn, J.	Variational Eigenstrain Multiscale Method  Li, S.*	
11:21	The Sandia Mesh Database (MDB)  Tautges, T., Merkley, K., Stimpson, C., Meyers, R.*	A Particle Method with Global Superconvergence  Hao, S.* , Han, W.	Coupling Methods for Continuum Model with Molecular Model  Belytschko, T., Xiao, S.*	

**Tuesday, July 29**  
**1:00 – 1:45 PM**

**Plenary Lecture 5**

**Ballroom A**



***Scalable Solvers in DOE's SciDAC Initiative***

**David Keyes**  
**Old Dominion University**

**Tuesday, July 29**  
**1:00 – 1:45 PM**

**Plenary Lecture 5**

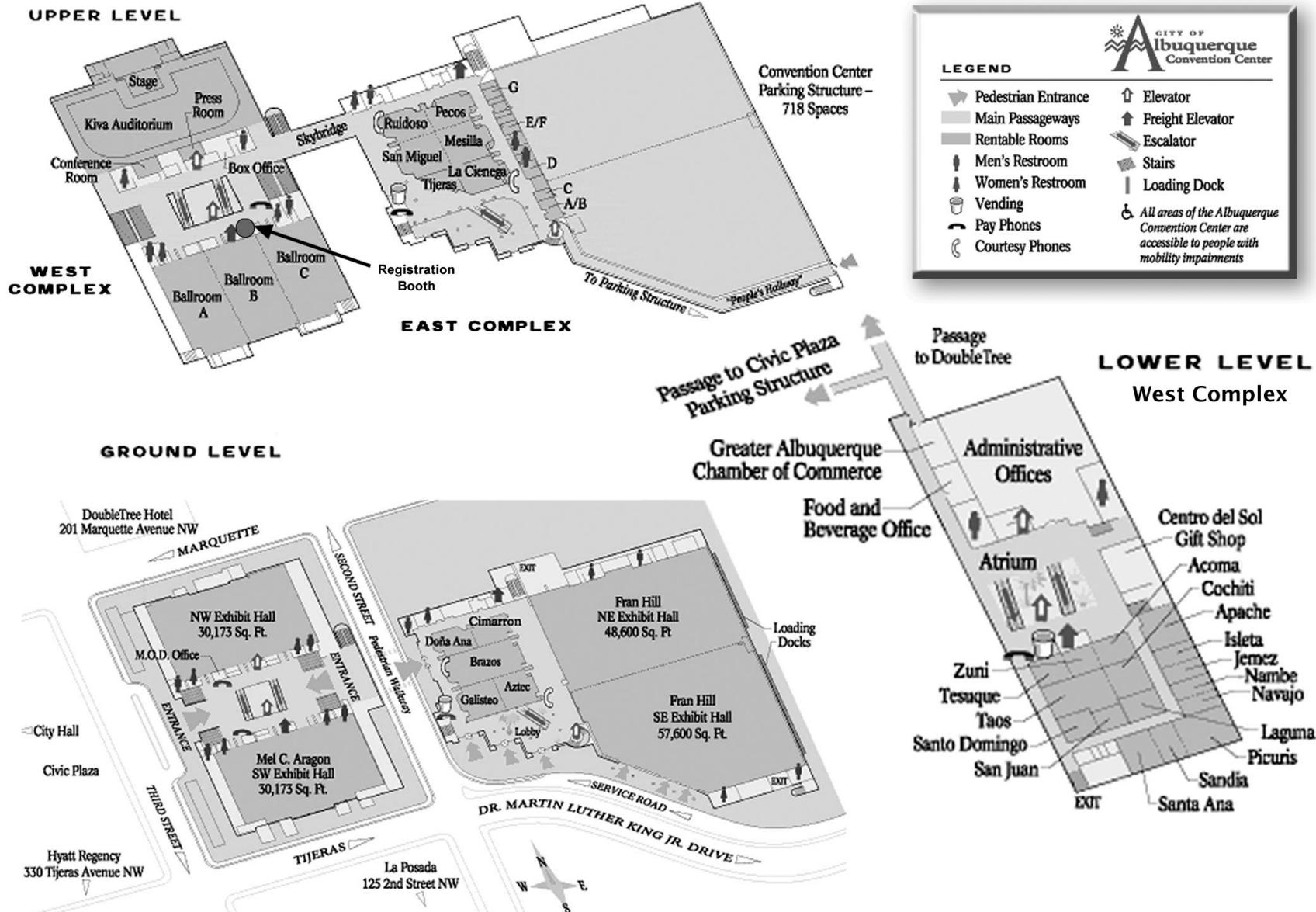
**Ballroom B**



***Exact Sequences, de Rham Diagram, Maxwell Equations, hp Adaptivity***

**Leszek Demkowicz**  
**The University of Texas at Austin**

# Albuquerque Convention Center Map



**TUESDAY, JULY 29: 2:00 – 4:00 PM**

<b>Room</b>	<b>Location</b>	<b>Technical Session Title</b>
Acoma	W. 1 <sup>st</sup> Floor	A Minisymposium on Immersed Boundary and Fictitious Domain Methods : Session II
Apache	W. 1 <sup>st</sup> Floor	Innovations in Numerical Methods, Algorithms, and Solvers for Computational Mechanics : Session I
Cochiti	W. 1 <sup>st</sup> Floor	Computational Fluid Mechanics for Free and Moving Boundaries : Session II
Isleta	W. 1 <sup>st</sup> Floor	Computational Methods for Wave Propagation : Session I
Jemez	W. 1 <sup>st</sup> Floor	Fluid Structure Interaction : Session I
Laguna	W. 1 <sup>st</sup> Floor	Computational Dynamics of Complex Fluids: Polymers, Glasses, Suspensions and Emulsions Session I Suspensions I
Nambe'	W. 1 <sup>st</sup> Floor	Advances in Computational Structural Mechanics for Department of Defense Applications : Session I
Navajo	W. 1 <sup>st</sup> Floor	Computational Bioengineering : Session I
Picuris	W. 1 <sup>st</sup> Floor	Discontinuous Galerkin Methods for Computational Mechanics : Session V Fluid Flow
Sandia	W. 1 <sup>st</sup> Floor	
Santa Ana	W. 1 <sup>st</sup> Floor	Stabilized Numerical Methods Via Finite Calculus (FIC) : Session I
Santo Domingo	W. 1 <sup>st</sup> Floor	p- & hp Finite Elements and Boundary Element Methods : Session V
Taos	W. 1 <sup>st</sup> Floor	Dynamics of Jointed Structures : Session I
Tesuque	W. 1 <sup>st</sup> Floor	Inverse Problems : Session V
Zuni	W. 1 <sup>st</sup> Floor	Uncertainty Quantification : Session I Mathematical Foundations of Uncertainty Quantification
La Cienega	E. Upper level	Symposium on Crashworthiness & Impact Engineering : Session V
Mesilla	E. Upper level	Computational Geomechanics : Session III
Pecos	E. Upper level	Fundamentals and Applications of Cohesive Models : Session II
Ruidoso	E. Upper level	Verification & Validation in Computational Mechanics : Session I
San Miguel	E. Upper level	Structural Optimization - Multiphysics Problems in Shape and Topology Design Session II Design Parametrization in Topology and Shape Design
Tijeras	E. Upper level	Computational Issues in the Representation and Evaluation of Structure and Properties in the Plastic Response of Polycrystalline Materials : Session III
Aztec	E. Lower Level	4 <sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part I : Session V Quad/Hex Meshing II
Cimarron	E. Lower Level	Recent Developments in Multiscale Modeling : Session II
Dona Ana	E. Lower Level	Multiscale Modeling and Simulation of Material Behavior : Session V
Galisteo	E. Lower Level	4 <sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part II : Session II Surface Meshing
Ballroom A	W. 3 <sup>rd</sup> Floor	Symposium on Meshfree Methods: Part I : Session V Meshfree Methods and Processing
Ballroom B	W. 3 <sup>rd</sup> Floor	Multiple-scale Analysis of Nanoscale Mechanics and Materials : Session V Applications



**TUESDAY, JULY 29: 2:00 – 4:00 PM**

Time 24 Min. Talks	Room: Acoma  <b>A Minisymposium on Immersed Boundary and Fictitious Domain Methods</b>  <b>Session II</b>  Session Chairs: Wong, X., Feng, J.	Room: Apache  <b>Innovations in Numerical Methods, Algorithms, and Solvers for Computational Mechanics</b>  <b>Session I</b>  Session Chairs: Bartel, T., Ferencz, R.	Room: Cochiti  <b>Computational Fluid Mechanics for Free and Moving Boundaries</b>  <b>Session II</b>  Session Chairs: Baer, T., Kothe, D.	Room: Isleta  <b>Computational Methods for Wave Propagation</b>  <b>Session I</b>  Session Chairs: Harari, I., Givoli, D.
02:00	A Simulation of Deformable Particles Falling through a Straight Channel  Zhu, J.* , Wang, X., Chen, X.	KEYNOTE:  Fast Cell-Sparse Solver in Finite Element Analyses  Yuan, M.* , Chen, P., Sun, S.	Resolving Dynamic Contact Line Behavior with a Volume-of-Fluid (VOF) Approach  Hirt, C.W.*  Improvements on the Modeling of Surface Tension-driven Flow with the Continuum Surface Force Method  Francois, M.* , Dendy, E., Sicilian, J., Kothe, D.	Perfectly Matched Layers for Elastodynamics of Unbounded Domains  Basu, U.* , Chopra, A.  The Effect of Wave Number on Local Absorbing Boundary Conditions for Acoustic Scattering  Djellouli, R.* , Harari, I.
02:24	Immersed Finite Element Method  Zhang, L.* , Gerstenberger, A., Wang, X., Liu, W.			
02:48	A Note on Immersed Boundary Formulation for Elastic Bodies in Fluids  Patankar, N., Wang, X., Liu, W., Sharma, N.*	A Multilevel Approach to the Parallel Solution of Large-Scale Nonlinear Shell Problems  Gee, M.* , Wall, W., Ramm, E.	Motion of a Viscous Drop with a Moving Contact Line  Zhang, J., Miksis, M.* , Bankoff, S.	High-order Absorbing Boundaries for Time-dependent Problems  Givoli, D.* , Neta, B., van Joolen, V., Patlashenko, I.
03:12	Modeling Viscous Flows with Suspended Particles Passing through a Channel Branch  Wei, K., Feng, J.* , Zhu, J., Wang, X.	Parallel Processing of Finite Strain, Materially Nonlinear and Incompressible Finite Element Analysis Problems  Becene, A.* , Perucchio, R.	Computation of Multiphase Systems with Phase Field Models  Badalassi, V.* , Ceniceros, H., Banerjee, S.	Estimating the Error Due to Domain Truncation in Time-accurate Simulations of Waves  Hagstrom, T.*
03:36	Basic Study of Weighting Function for Element Free Galerkin Method  Ishizawa, D.*		Volume Tracking on Adaptively-Refined Structured Meshes  Malik, M., Bussmann, M.*	Absorbing Boundaries of Elliptical Shape for Two-dimensional Time- and Frequency-domain Analysis of Acoustic Problems  Lee, S., Kallivokas, L.*

**TUESDAY, JULY 29: 2:00 – 4:00 PM**

Time 24 Min. Talks	Room: Jemez <b>Fluid Structure Interaction</b> <b>Session I</b>  Session Chairs: Ohayon, R., Kvamsdal, T.	Room: Laguna <b>Computational Dynamics of Complex Fluids: Polymers, Glasses, Suspensions and Emulsions</b>  <b>Session I</b> <b>Suspensions I</b>  Session Chairs: Morris, J., Rao, R.	Room: Nambe'’ <b>Advances in Computational Structural Mechanics for Department of Defense Applications</b>  <b>Session I</b>  Session Chairs: Danielson, K., Littlefield, D.	Room: Navajo <b>Computational Bioengineering</b> <b>Session I</b>  Session Chairs: De, S., Mueller, J.
	02:00	An Efficient Preconditioner for Large-Displacement Fluid-Structure Interaction Problems  Heil, M*	KEYNOTE:  Modeling and Predicting Suspension Flows with the Aid of Computer Simulation  Brady, J.*	KEYNOTE:  Advances in Computing for Problems Involving Intense Impulsive Loading  Johnson, G.*
02:24	On the Nonnormality of Subiteration for Fluid-Structure Interaction Problems  van Brummelen, E.*, de Borst, R.			
02:48	Subiteration-Preconditioned GMRES Acceleration for Fluid-Structure Interactions  Michler, C.*, van Brummelen, E., de Borst, R.	Large Scale Simulation of Colloidal Suspensions  Meng, Q., Viera, M., Higdon, J.*	Asynchronous Simulation of High-Explosive Detonations  Lew, A.*, Ortiz, M.	Coupled 3D Mesh Generation and Registration for the Human Brain  Zhang, J.*, Sullivan, J., Wu, Z.
03:12	Parallel Strong Coupling Method for Interaction of Incompressible Viscous Fluid and an Elastic Body with Finite Deformation  Ishihara, D.*, Yoshimura, S., Yagawa, G.	A Corrected Completed Double Layer Boundary Integral Equation  Mammoli, A., Ingber, M.*	Damage Characterization on Bumper Plates When Subjected To Hypervelocity Impacts  Carrasco, C.*, Meichor-Lucero, O., Osegueda, R., Espino, L., Fernandez, A.	Preliminary Study of a Mesh-Based Cortical Surface Range Estimation Method within a Stereopsis System  Wu, Z.*, Sun, H., Paulsen, K.
03:36		Numerical Investigation of Ferrofluid Behavior in Micron-Scale Geometries  Schumacher, K.*, Finlayson, B.		Extended Finite Element And Level Set Methods For Biofilm Growth Simulations  Bordas, S.*, Moran, B., Chopp, D.

**TUESDAY, JULY 29: 2:00 – 4:00 PM**

Time 24 Min. Talks	Room: Picuris <b>Discontinuous Galerkin Methods for Computational Mechanics</b>  <b>Session V Fluid Flow</b>  Session Chairs: Dawson, C., Falk, R.	Room: Sandia  <b>None at this time</b>	Room: Santa Ana  <b>Stabilized Numerical Methods Via Finite Calculus (FIC)</b>  <b>Session I</b>  Session Chairs: Oñate, E., Idelsohn, S.	Room: Santo Domingo  <b>p- &amp; hp Finite Elements and Boundary Element Methods</b>  <b>Session V</b>  Session Chairs: Schoeberl, J., Zumbusch, G.
02:00	KEYNOTE:  A Stabilized Mixed Discontinuous Galerkin Method for Darcy Flow  Hughes, T.* , Masud, A.		Stabilized Finite Element Formulation for Advection-Diffusion-Absorption Problems Using Finite Calculus  Miquel, J.* , Hauke, G.	hp-Adaptive BEM for Weakly Singular Operators  Heuer, N.*
02:24			Extended Variational Principles for FIC Equations  Oñate, E.* , Felippa, C.	A Fast Multi-Level Time Convolution Method for Transient Heat Diffusion  Wang, C.* , Grigoriev, M., Dargush, G.
02:48	Adaptive Control of Coupled Continuous/Discontinuous Galerkin Methods Applied to Convection-Diffusion Equations  Ern, A., Proft, J.*		Residual Correction Method Based on Finite Calculus  Taylor, R.* , Zienkiewicz, O., Oñate, E., Rojek, J.	Multiresolution Finite Element and Boundary Element Methods Based on Wavelet and Subdivision Theory  Amaratunga, K.* , Sudarshan, R., D'Heedene, S.
03:12	Discontinuous Galerkin Methods for Modeling Flow and Reactive Transport  Sun, S.* , Wheeler, M.		FIC Stabilization for Particle Methods in Fluid Mechanics Problems  Idelsohn, S.* , Del Pin, F.	A Tensorial Modal Expansion for Triangles and Tetrahedra  Bittencourt, M.*
03:36	A Discontinuous Galerkin Method for Three-Dimensional Shallow Water Equations  Aizinger, V.* , Dawson, C.			Incremental Finite Element Modeling of Progressive Damage in Layered Composite Materials  Zeng, L.*

**TUESDAY, JULY 29: 2:00 – 4:00 PM**

Time 24 Min. Talks	Room: Taos <b>Dynamics of Jointed Structures</b> <b>Session I</b>  Session Chairs: Segalman, D., Bergman, L.	Room: Tesuque <b>Inverse Problems</b> <b>Session V</b>  Session Chairs: Feijoo, G., Oberai, A.	Room: Zuni <b>Uncertainty Quantification</b> <b>Session I</b> <b>Mathematical Foundations of Uncertainty Quantification</b>  Session Chair: Red-Horse, J.	Room: La Cienega <b>Symposium on Crashworthiness &amp; Impact Engineering</b> <b>Session V</b>  Session Chairs: Patra, A., Gu, L.
02:00	KEYNOTE:  Measurement of Friction Force and Hysteresis  Akay, A. *, Filippi, S., Citelli, M.	Reconstruction of Elastic Modulus from Ultrasound Images  Gokhale, N. *, Oberai, A., Barbone, P.	KEYNOTE:  Error Estimates for Spectral Representations in Stochastic Computational Mechanics  Ghanem, R. *	Computer Methods For Vehicle Crash Safety Robust Design  Gu, L. *, Yang, R.
02:24		Topological Derivative for the Inverse Scattering of Elastic Waves  Guzina, B. *, Bonnet, M.		Validation Of A Crash Simulation Of A Vertical Drop Test Of A B737 Fuselage Section  Jackson, K. *, Fasanella, E.
02:48	Self Organized Criticality in Structural Elements with Friction  Mann, T. *, Peterson, L., Hinkle, J.	Iterative Methods for Tikhonov Regularization  Calvetti, D. *, Reichel, L.	Galerkin Finite Element Methods for Stochastic Elliptic Partial Differential Equations  Babuska, I., Tempone, R., Zouraris, G. *	Impact Simulation For A Car Gyro System  Song, G. *, Tomase, J., Chiou, J.
03:12	A Model for Small-Scale Surface Features with Application to Finite Element Analysis of Concrete Arch Dams  Solberg, J., Noble, C. *	Iterative Methods for Large-Scale Ill- Posed Problems  Calvetti, D., Reichel, L. *	The p-h Version of the Stochastic Galerkin FEM: Error Analysis and Computational Efficiency Comparisons  Babuska, I., Tempone, R. *, Zouraris, G.	Validation Methods For Impact Dynamic Models  Hardy, R. *, Boitnott, R., Stockwell, A.
03:36	Impact of Frictional Structural Nonlinearity in the Presence of Negative Aerodynamic Damping  Mignolet, M. *, Agelastos, A., Liu, D.		Uncertainty Quantification in Analysis and Design of Stochastic Continuum Systems  Zabaras, N., Narayanan, V. *	A Viscoplastic Model For Removable Epoxy Foams  Neilsen, M. *, Lu, W., Olsson, W., Frew, D.

**TUESDAY, JULY 29: 2:00 – 4:00 PM**

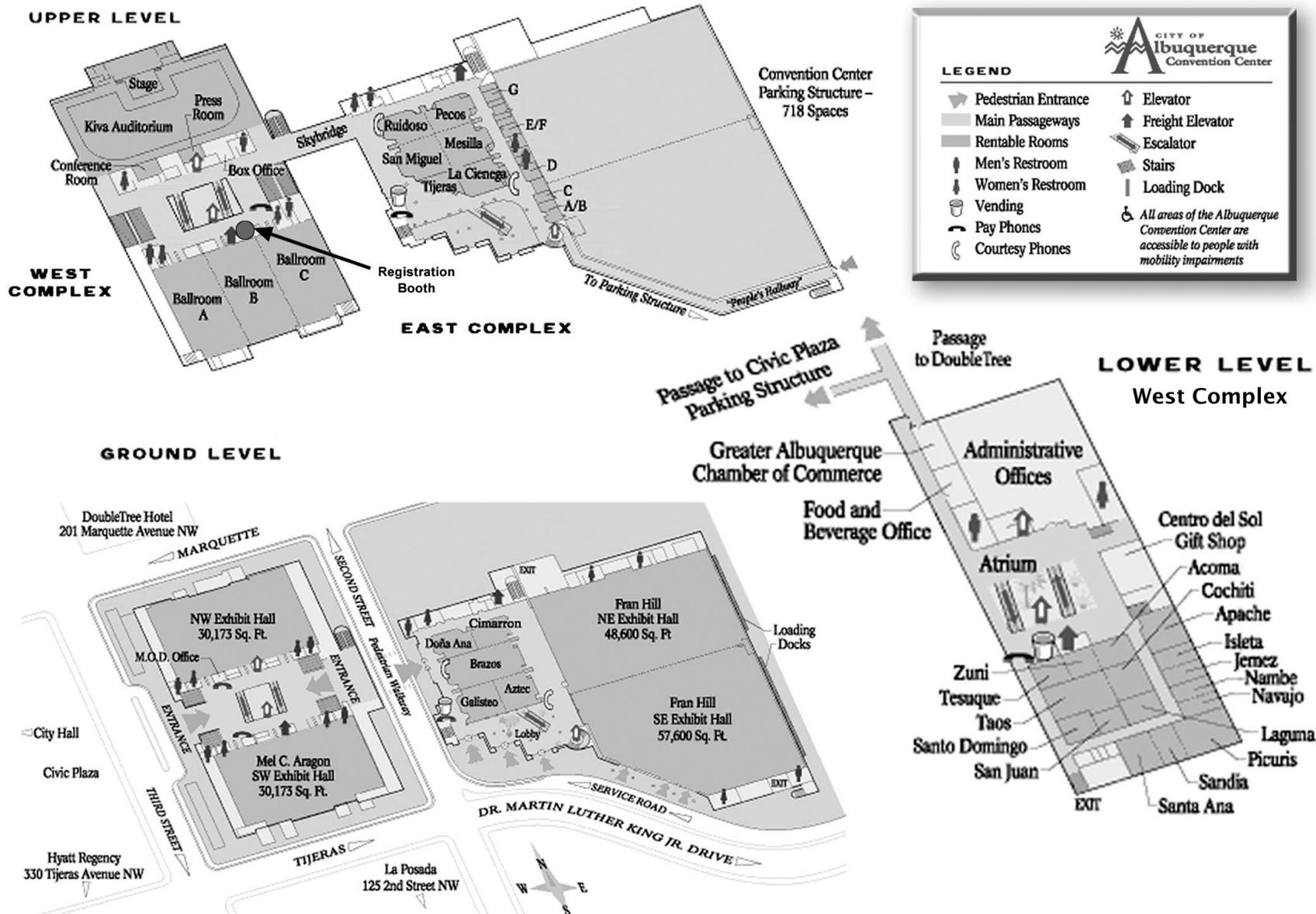
Time 24 Min. Talks	Room: Mesilla <b>Computational Geomechanics</b> <b>Session III</b>  Session Chairs: Zeghal, M., Schrefler, B.	Room: Pecos <b>Fundamentals and Applications of Cohesive Models</b> <b>Session II</b>  Session Chairs: Rochinha, F., Paulino, G.	Room: Ruidoso <b>Verification &amp; Validation in Computational Mechanics</b> <b>Session I</b>  Session Chairs: Reddy, J., Schwer, L.	Room: San Miguel <b>Structural Optimization - Multiphysics Problems in Shape and Topology Design</b> <b>Session II</b> <b>Design Parametrization in Topology and Shape Design</b>  Session Chair: Choi, K.
02:00	KEYNOTE:  FE Modeling of Hydro-Thermo-Chemo-Mechanical Behavior of Concrete at Early Ages  Schrefler, B.*, Pesavento, F., Gawin, D.	Multiple Crack Growth in Unit Cell with Extended Finite Element Method  Budyn, E.*, Zi, G., Belytschko, T.  On the Implementation of the Symmetric Galerkin BEM for Domains Connected by Cohesive Interfaces  Salvadori, A.*	KEYNOTE:  Assessing Discretization Uncertainty in V&V  Roache, P.*	PDE-Driven Level Sets, Velocity Fields and Perimeter Penalization for Structural Topology Optimization  Wang, M.*, Wang, X.  Phase Field Method in Optimal Design  Bourdin, B.*, Chambolle, A.
02:24	Rate-Sensitive, Transversely Isotropic Material Model for Large-Scale Computational Geomechanics  Fossum, A.*	Finite-deformation Shear Band Elements for Three-dimensional Shear Band Propagation Analysis  Yang, Q., Mota, A.*, Weinberg, K., Ortiz, M.	Cohesive Elements for Dynamic Fracture Analysis of Homogeneous and Graded Materials  Zhang, Z.*, Paulino, G.	Parametric Surfaces for Topology and Shape Optimizations  Chang, K.*
02:48	Parallel Adaptive Computer Simulations of Geophysical Mass Flows  Bauer, A., Nichita, C., Patra, A., Pitman, E.*	Cohesive Crack Propagation Analysis in Damaging Nonlocal Continua  Mariani, S.*, Comi, C., Perego, U.	Isoparametric Graded Finite Elements for Nonhomogeneous Materials  Kim, J.*, Paulino, G.	Design Sensitivity Analysis and Optimization of Eulerian Design Problems  Kim, N.*, Chang, Y.
03:12	Micro-Mechanical Simulation of Granular Soil Liquefaction  Zeghal, M.*, El Shamy, U.	Fracture Simulation of Solid Oxide Fuel Cells (SOFCs)  Zhang, P., Solasi, R.*	Verification, Validation, and Benchmarks for Numerical Fluid Flow Simulations  Pontaza, J.P.*	A Geometry Projection Method for Shape Optimization with Design-Dependent Boundary Loads  Norato, J.*, Haber, R., Bendsøe, M., Tortorelli, D.

**TUESDAY, JULY 29: 2:00 – 4:00 PM**

Time 24 Min. Talks	Room: Tijeras  <b>Computational Issues in the Representation and Evaluation of Structure and Properties in the Plastic Response of Polycrystalline Materials</b>  <b>Session III</b>  Session Chairs: Maniatty, A., Miller, M.	Room: Aztec  <b>4<sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part I</b>  <b>Session V</b>  <b>Quad/Hex Meshing II</b>  Session Chairs: Guoy, D., Shepard, M.	Room: Cimarron  <b>Recent Developments in Multiscale Modeling</b>  <b>Session II</b>  Session Chairs: Zohdi, T., Ghanem, R.	Room: Dona Ana  <b>Multiscale Modeling and Simulation of Material Behavior</b>  <b>Session V</b>  Session Chairs: Cuitino, A., Wolf, D.
	02:00	On the Influence of Phase Contiguity on the Strength and Stiffness of Two-Phase Polycrystalline Solids  Han, T.* , Dawson, P.	Domain Decomposition for Quad Meshing by Macro Delaunay Refinement  Guoy, D.* , Erickson, J.	KEYNOTE:  Experiments, Modeling, and Simulation of the Superelastic Effect in Shape-Memory Alloys  Papadopoulos, P.*
02:24	Alloy 718 Extrusion Modeling - Unstable Flow and Mesh Enrichment  Mika, D.* , Myers, P., Majorell, A., Jiang, L., Kocak, S., Wan, J., Shepherd, M.	Anisotropic Quad Mesh Generation Based on Discrete Surfaces  Merhof, D., Grosso, R.* , Tremel, U.		KEYNOTE:  Multiscale Simulation of Microstructural Evolution in Polycrystalline Materials  Wolf, D.*
02:48	Polycrystals and Computational Design: Is the Control of Microstructure-Sensitive Properties Feasible?  Ganapathysubramanian, S.* , Zabaras, N.	DTHEX: An Improved All-Hexahedral Meshing Scheme Using General Coarsening Tools  Richards, S.* , Benzley, S., Shepherd, J., Stephenson, M.	A Dispersive Gradient Elasticity Model Derived From a Discrete Microstructure Including Higher-Order Stiffness and Higher-Order Mass  Askes, H.* , Metrikine, A.	Coupling Continuum Elasticity and Mass Transport Via Atomistic Modeling: Stress Effects on Vacancies in Stillinger-Weber Silicon  Bouville, M., de Graeve, D., Falk, M.* , Garikipati, K.
03:12	Microstructure Sensitive Design Using Statistical Continuum Mechanics Based on Two-Point Correlation Functions  Garmestani, H.* , Adams, B., Saheli, G.	Mesh Improvement by Subdivision of Tetras into Hexes  Marcal, P.*	Multiscale Simulation of Defects Using Multigrid Atomistic Continuum Method  Datta, D.* , Picu, C., Shephard, M.	Finite Element Modeling and Simulation of Bulk Metallic Glasses  Yang, Q.* , Mota, A., Ortiz, M.
03:36		3D FEA for Discontinuous Mapped HEXA8 Mesh With Element-Wise Surface-Mesh Based Serendipity Blending Function  Tezuka, A.* , Matsumoto, J.	Two Scale Modeling of Plain Weave Composites with Reinforcement Imperfections  Zeman, J., Wierer, M., Sejnoha, M.*	Continuum Modeling of Hysteresis in a Metal Hydride System  Krenn, C.* , Wolfer, W.

TUESDAY, JULY 29: 2:00 – 4:00 PM				
Time 24 Min. Talks	Room: Galisteo <b>4<sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part II</b>  <b>Session II Surface Meshing</b>  Session Chairs: Yamakawa, S., Burns, S.	Room: Ballroom A <b>Symposium on Meshfree Methods: Part I</b>  <b>Session V Meshfree Methods and Processing</b>  Session Chairs: Libersky, L., Hao, S.	Room: Ballroom B <b>Multiple-scale Analysis of Nanoscale Mechanics and Materials</b>  <b>Session V Applications</b>  Session Chairs: Karpov, E., Fang, H.	
02:00	High Quality Triangular/Quadrilateral Mesh Generation of a 3D Polygon Model via Bubble Packing  Yamakawa, S.* , Shimada, K.	KEYNOTE:  Massively Parallel Computing of Fracture Mechanics by Free Mesh Method  Yagawa, G.* , Chang, Y., Yoshino, K., Inaba, M.	Analysis of Contacts Between Rough Surfaces Using Finite Element Methods  Hyun, S.* , Robbins, M., Pei, L., Molinari, J.  Studies on Red Blood Cell Aggregations using IFEM and MD  Liu, Y.* , Zhang, L., Liu, W.	
02:24	Simplification of Composite Parametric Surface Meshes  Borouchaki, H., Laug, P.*			
02:48	Improving Surface Remeshing by Feature Recognition  Rassineux, A.* , Chappuis, C., Breitkopf, P., Villon, P.	Automatic Preprocessing in the Method of Finite Spheres  Macri, M., De, S.*	Application of Homogenization Method to PZT Layout Problem with Ultrafine Ink-Jet Technology  Nagai, H.* , Tezuka, A., Silva, E., Murata, K., Iijima, T.	
03:12	A Novel Segmentation Method for 3D Surface Meshes  Srinark, T.* , Kambhamettu, C.	Meshfree Prototype System with GUI for Structural Analysis System Using EFGM  Hagihara, S.* , Tsunori, M., Ikeda, T., Miyazaki, N., Watanabe, T., Jin, C.	Development of the Multi-Scale Method for LSI Lithography Mask  Sawamura, J.* , Suzuki, K., Ohtsubo, H., Matsunaga, Y.	
03:36	Boundary-Conforming Curvilinear Coordinates with Grid Curves Control Applied to Scattering from Arbitrary Shape Obstacles  Villamizar, V.* , Rojas, O.	Boundary Condition Enforcement in Stress Analysis Using Structured Mesh  Nagashima, T.* , Niiyama, K., Ishihara, Y.		

# Albuquerque Convention Center Map



TUESDAY, JULY 29: 4:30 – 6:30 PM		
Room	Location	Technical Session Title
Acoma	W. 1 <sup>st</sup> Floor	Numerical Methods for Advection Dominated Transport : Session I
Apache	W. 1 <sup>st</sup> Floor	Innovations in Numerical Methods, Algorithms, and Solvers for Computational Mechanics : Session II
Cochiti	W. 1 <sup>st</sup> Floor	Computational Fluid Mechanics for Free and Moving Boundaries : Session III
Isleta	W. 1 <sup>st</sup> Floor	Computational Methods for Wave Propagation : Session II
Jemez	W. 1 <sup>st</sup> Floor	Fluid Structure Interaction : Session II
Laguna	W. 1 <sup>st</sup> Floor	Computational Dynamics of Complex Fluids: Polymers, Glasses, Suspensions and Emulsions Session II Multiphase Flow
Nambe'	W. 1 <sup>st</sup> Floor	Advances in Computational Structural Mechanics for Department of Defense Applications : Session II
Navajo	W. 1 <sup>st</sup> Floor	Computational Bioengineering : Session II
Picuris	W. 1 <sup>st</sup> Floor	Discontinuous Galerkin Methods for Computational Mechanics : Session VI Large-Scale Applications
Sandia	W. 1 <sup>st</sup> Floor	High Performance, Custom and CAS-Developed Finite Elements : Session I
Santa Ana	W. 1 <sup>st</sup> Floor	Stabilized and Multiscale Finite Element Methods : Session I
Santo Domingo	W. 1 <sup>st</sup> Floor	Advances in A Posteriori Error Estimation : Session I
Taos	W. 1 <sup>st</sup> Floor	Dynamics of Jointed Structures : Session II
Tesuque	W. 1 <sup>st</sup> Floor	Supporting Infrastructures for Computational Mechanics Applications : Session I
Zuni	W. 1 <sup>st</sup> Floor	Uncertainty Quantification : Session II Uncertainty Quantification in Model Validation
La Cienega	E. Upper level	Symposium on Crashworthiness & Impact Engineering : Session VI
Mesilla	E. Upper level	Computational Geomechanics : Session IV
Pecos	E. Upper level	Fundamentals and Applications of Cohesive Models : Session III
Ruidoso	E. Upper level	Verification & Validation in Computational Mechanics : Session II
San Miguel	E. Upper level	Structural Optimization - Multiphysics Problems in Shape and Topology Design Session III Interaction Problems
Tijeras	E. Upper level	Dislocation Mechanics : Session I
Aztec	E. Lower Level	4 <sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part I Session: VI Adaptivity I
Cimarron	E. Lower Level	Recent Developments in Multiscale Modeling : Session III
Dona Ana	E. Lower Level	Multiscale Modeling and Simulation of Material Behavior : Session VI
Galisteo	E. Lower Level	
Ballroom A	W. 3 <sup>rd</sup> Floor	Symposium on Meshfree Methods: Part I : Session VI Stability
Ballroom B	W. 3 <sup>rd</sup> Floor	Symposium on Meshfree Methods: Part II : Session I Extended/Generalized FEM

**TUESDAY, JULY 29: 4:30 – 6:30 PM**

Time 24 Min. Talks	Room: Acoma <b>Numerical Methods for Advection Dominated Transport</b> <b>Session I</b> Session Chair: Tezduyar, T.	Room: Apache <b>Innovations in Numerical Methods, Algorithms, and Solvers for Computational Mechanics</b> <b>Session II</b> Session Chairs: Voth, T., Ferencz, R.	Room: Cochiti <b>Computational Fluid Mechanics for Free and Moving Boundaries</b> <b>Session III</b> Session Chairs: Baer, T., Kothe, D.	Room: Isleta <b>Computational Methods for Wave Propagation</b> <b>Session II</b> Session Chairs: Givoli, D., Harari, I.
04:30	KEYNOTE: Localized Adjoint Method: An Updated Review	The Least-Squares Finite Element Method for Large Deflection Analysis of Plates  Cai, X., Jiang, B.*	On the SUPG and RKDG Finite Element Formulations of the Level Set Method  Paolucci, S.*	Octree-Based Finite Element Method for Large-Scale Earthquake Ground Motion Modeling in Heterogeneous Basins  Kim, E., Bielak, J.* , Ghattas, O.
04:54	Herrera, I.*	Application of Boundary Eigensolution Concepts in Computational Mechanics  Hadjesfandiari, A., Dargush, G.*	An Adaptive Stabilized Finite Element Analysis of Multi-Phase Flows using Level Set Approach  Jansen, K., Nagrath, S.* , Lahey, R.	A High-Order Discontinuous Galerkin Method with Plane Waves and Lagrange Multipliers for the Solution of Short Wave Acoustic Scattering Problems  Farhat, C.* , Wiedemann-Goiran, P.
05:18	A ELSCM Method for Unsteady-State Advection-Diffusion Equations  Wu, L.*	Hypersingular Boundary Surface Finite Element Method  Hadjesfandiari, A.*	A Level-Set Based Model of MEMS Fabrication Processes at Feature Length Scales  Musson, L.* , Plimpton, S., Schmidt, R.	Numerical Investigations of GLS and GGGS for Acoustic  Harari, I.* , Magoules, F.
05:42	Application of Localized Adjoint Method to the Steady State of Advection Dominated Transport  Yates, R.* , Herrera, I.	Three Dimensional Vibration Analysis of a Thick-Walled Circular Torus  Liu, Y., Buchanan, G.*	A Particle Corrected Level Set Method for Interface Reconstruction  Chung, M.*	An Efficient Multidomain Pseudospectral Method for the Study of Wave Propagation in Unbounded Media  Seriani, G.*
06:06		Novel Methods for Reducing the Dimensions of Large-Scale Problems: Applications to Fluid Mechanics  Bobba, K.* , Doyle, J., Gharib, M.		Pollution Free Finite Element Processes for Helmholtz Equation for Any Wave Number  Surana, K.* , Gupta, P., Reddy, J., Tenpas, P.

**TUESDAY, JULY 29: 4:30 – 6:30 PM**

Time 24 Min. Talks	Room: Jemez <b>Fluid Structure Interaction Session II</b>  Session Chairs: Kvamsdal, T., Ohayon, R.	Room: Laguna <b>Computational Dynamics of Complex Fluids: Polymers, Glasses, Suspensions and Emulsions Session II Multiphase Flow</b>  Session Chair: Rao, R., Morris, J.	Room: Nambe'’ <b>Advances in Computational Structural Mechanics for Department of Defense Applications Session II</b>  Session Chairs: Batra, R., Weed, R.	Room: Navajo <b>Computational Bioengineering Session II</b>  Session Chairs: Hollister, S., Simon, B.
04:30	A Fluid-Structure Interaction Method Using X-FEM and a Level-set Method  Legay, A.* , Belytschko, T.	Subdivision Schemes for the Parameterization of Contact Surfaces with Arbitrary Mesh Topology  Stadler, M.* , Holzapfel, G.	High Performance Computing for Large-Scale Army Structural Applications  Danielson, K.* , Adley, M., Akers, S., O'Daniel, J.	KEYNOTE:  Coupled "EMPMTH" FEMS for Transport in Soft Biological Structures
04:54	A Mortar Finite Element Method for Fluid-Structure Interaction Problems  Swim, E.* , Seshaiyer, P.	Explicit Transient Dynamics Enforcement of Frictional Sliding Contact in ACME  Brown, K.* , Heinstein, M., Jones, R., Voth, T.	Computational Analysis of Penetration into Concrete  O'Daniel, J.* , Cargile, J.	Simon, B.* , Williams, S., Radtke, G., Liu, Z., Rigby, P.
05:18	Error and Convergence Analysis of P-Refinement Schemes for Elastodynamics and Coupled Elasto-Acoustics  Dey, S.* , Couchman, L., Datta, D., Shephard, M.	A Contact Algorithm for the Signorini Problem Using Space-Time Finite Elements  Pattillo II, P.* , Tortorelli, D.	Concrete Modeled as an Inhomogeneous Material: Numerical Simulations  Akers, S.*	A Dynamic Poroviscoelastic Finite Element Formulation for Biological Soft Tissues: Potential Applications to High-Speed Impact Biomechanics  Suh, J.*
05:42	Sensitivity Analysis and Design Optimization of Aeroelastic Structures Undergoing Large Displacements  Barcelos, M.* , Pajot, J., Maute, K.	A Simple One Step Line Search For Use In Quasi-Static Solid Mechanics Contact Calculations  Mitchell, J.* , Heinstein, M.	Simulation of Structures Subjected to Short Duration Dynamic Loads  Papados, P.*	Orthogonal Representations for Transversely Isotropic Hyperelasticity: Theory and Numerical Aspects  Lu, J., Zhang, L.*
06:06		On the Concept of an Arbitrary Reference Configuration Formulation for Finite Deformation Contact-Impact Problems  Zhou, X.* , Sha, D., Tamma, K.		Real Time Simulation of Soft Tissues in Minimally Invasive Surgical Procedures Using a Meshfree Approach  De, S.*

**TUESDAY, JULY 29: 4:30 – 6:30 PM**

Time 24 Min. Talks	Room: Picuris <b>Discontinuous Galerkin Methods for Computational Mechanics</b>  <b>Session VI Large-Scale Applications</b>  Session Chairs: Flaherty, J., Adjerid, S.	Room: Sandia <b>High Performance, Custom and CAS-Developed Finite Elements</b>  <b>Session I</b>  Session Chairs: Felippa, C., Papadrakakis, M.	Room: Santa Ana <b>Stabilized and Multiscale Finite Element Methods</b>  <b>Session I</b>  Session Chairs: Hughes, T., Franca, L.	Room: Santo Domingo <b>Advances in A Posteriori Error Estimation</b>  <b>Session I</b>  Session Chairs: Peraire, J., Stewart, J.
04:30	Application of Discontinuous Galerkin Method. Large Scale Problem: Cannon Blast Modeling  Chevaugeon, N.*, Remacle, J., Flaherty, J., Cler, D., Shephard, M.	KEYNOTE:  From Polygonal Particles to a Continuum Representation -An Application of the Discrete Element Method  Ramm, E.*, D'Addetta, G.	KEYNOTE:  Suitable Choices for the Subgrids  Brezzi, F.*	A Posteriori Error Bounds for Reduced-Basis Approximation of Parameterized Noncoercive and Nonlinear Elliptic Partial Differential Equations  Veroy, K.*, Prudhomme, C., Nguyen, N., Patera, A.  Performance of a Subdomain-Based Residual Method for A Posteriori Error Estimation  Prudhomme, S.*, Nobile, F., Chamoin, L., Oden, J.
04:54	An Efficient Parallel Implementation of the Spacetime Discontinuous Galerkin Method Using CHARM++  Kale, L., Haber, R., Booth, J.*., Thite, S., Palaniappan, J.			
05:18	Implementing ALE Motion in a Discontinuous Finite Element Hydro Code  Prasad, M.*, Milovich, J., Shestakov, A.	The Discrete Strain Gap (DSG) Method and its Application to Shell Elements  Koschnick, F.*, Bischoff, M., Bletzinger, K.	Residual Based Computation of the Stabilization Parameters using Finite Calculus and the Finite Element Method  Oñate, E.*	Subdomain-Based Residual A Posterior Error Estimators Yielding Simultaneous Upper and Lower Bounds of the Error  Huerta, A.*, Parés, N., Díez, P.
05:42	The Unstructured Spectral Element Method Code: USEME  Dohnal, T.*, Hagstrom, T., Hesthaven, J., Nunn, N., Warburton, T.	Curved Quadratic Triangular Degenerated-and-Solid-Shell Elements  Sze, K.*, Kim, Y.	Modeling Multiscale Phenomena by a Finite Element Method  Franca, L.*, Madureira, A., Valentin, F., Tobiska, L.	Goal-Oriented a Posteriori Error Estimates for Finite Element Approximations Using Fundamental Solutions  Grätsch, T.*
06:06		Thick Shell Triangular Finite Element for Geometrically Nonlinear Analysis  Gal, E.*, Levy, R.	A Stabilized/Multiscale Finite Element Method for Super-Elasticity in Shape Memory Alloys  Masud, A.*, Xia, K.	A Post-Processing Technique Applied to Error Estimation of FEM Approximations of Helmholtz Equation  Paulino de Romero, R., Alves Rochinha, F.*

**TUESDAY, JULY 29: 4:30 – 6:30 PM**

Time 24 Min. Talks	Room: Taos <b>Dynamics of Jointed Structures</b> <b>Session II</b> Session Chairs: Gaul, L., Quinn, D.	Room: Tesuque <b>Supporting Infrastructures for Computational Mechanics Applications</b> <b>Session I</b> Session Chairs: Edwards, H., Wittum, G.	Room: Zuni <b>Uncertainty Quantification</b> <b>Session II</b> <b>Uncertainty Quantification in Model Validation</b> Session Chair: Wojtkiewicz, S.	Room: La Cienega <b>Symposium on Crashworthiness &amp; Impact Engineering</b> <b>Session VI</b> Session Chairs: Gu, L., Wu, S.
04:30	KEYNOTE: Dynamic Friction Modeling for Jointed Structures Berger, E.*, Deshmukh, D., Kantura, J.	KEYNOTE: A Parallel Infrastructure and Programming Model for Adaptive, Irregular Applications Lang, S.*	KEYNOTE: Combining Bottom-Up and Top-Down Approaches for Uncertainty Quantification Hasselman, T.*, Wathugala, G., Paez, T., Hinnerichs, T.	Modeling Effects On Strain And Strain Rate Histories In Automotive Impact Simunovic, S.*, Nukala, P., Fekete, J., Meuleman, D.
04:54				Topological And Shape Designs For Crashworthiness Criteria Li, Q.*, Steven, G., Xie, Y.
05:18	Computational Explorations of Joints Mechanics Bitsie, F.*, Hopkins, R., Segalman, D.	Modular Design of UG Applications Bastian, P., Reichenberger, V.*	Large-Scale Uncertainty/Sensitivity Simulations of Complex System Response in Fire Environments Romero, V.*, Figueira, V., Dempsey, F., Bainbridge, B., Sherman, M., Rajan, M., Wojtkiewicz, S., Hobbs, M., Dowding, K., Hogan, R., Tieszen, S.	Biofidelity Assessment Of Numerical Human And Dummy Models In Crash Test Conditions van Hoof, J.*
05:42	Predictable Interface Configurations for Friction Dampers: Design and Experimental Validation Hinkle, J.*, Peterson, L.	Overture and Rapsodi: Tools for Set-up and Solution of PDE-based Problems in Complex Moving Geometry Brown, D.*, Chand, K., Henshaw, W., Petersson, A., Quinlan, D.	Verification and Validation of Simulation Models Under Uncertainty Rebba, R.*, Mahadevan, S.	Advances In The Time Integration Of Dynamical Systems. Applications To Crashworthiness Problems Noels, L., Stainier, L.*, Ponthot, J.
06:06	Modeling Contact of Rough Surfaces Jones, R.*, Zeigler, D.	The SIERRA Computational Mechanics Framework: Parallel Error Handling Overfelt, J.*, Edwards, H., van de Geijn, R.	Verification of Calculations Using the Grid Convergence Index for Structural Finite Element Analyses Maupin, R.*, Luscher, D., Hemez, F., Doebling, S.	Response Corridors For The Human Leg In 3-Point Lateral Bending Kerrigan, J., Bhalla, K.*, Madeley, N., Crandall, J., Deng, B.

**TUESDAY, JULY 29: 4:30 – 6:30 PM**

Time 24 Min. Talks	Room: Mesilla <b>Computational Geomechanics</b> <b>Session IV</b>  Session Chairs: Jeremic, B., Hashash, Y.	Room: Pecos <b>Fundamentals and Applications of Cohesive Models</b>  <b>Session III</b>  Session Chairs: Ingraffea, A., Paulino, G.	Room: Ruidoso <b>Verification &amp; Validation in Computational Mechanics</b>  <b>Session II</b>  Session Chairs: Schwer, L., Reddy, J.	Room: San Miguel <b>Structural Optimization - Multiphysics Problems in Shape and Topology Design</b>  <b>Session III</b> <b>Interaction Problems</b>  Session Chair: Lipton, R.
04:30	Simulation of Local Inelastic Behavior in Large Scale Dynamics Analysis  Jeremic, B.*, Liao, J., Yang, Z.	KEYNOTE:  Finite Element Approximation of Plastic Hinges in Beams and Plates  Armero, F.*, Ehrlich, D.	Advancing V&V Methodologies -- A DoD Perspective  Youngblood, S.*  General Concepts for Experimental Validation of ASCI Code Applications  Pilch, M.*	Design of Morphing Wing Structures by Topology Optimization  Maute, K.*, Reich, G.  Shape And Configuration Design Sensitivity Analysis And Design Optimization Of High Frequency Structural-Acoustic Problems Using Energy Finite Element Method  Choi, K.*, Dong, J., Vlahopoulos, N., Wang, A., Zhang, W.
04:54	Numerical Modelling of Wave-Induced Liquefaction Around Pipelines  Vun, P.*, Chan, A., Dunn, S.			
05:18	Constitutive Model Update Using Observed Field Behavior  Marulanda, C.*, Hashash, Y., Ghaboussi, J.	Crack Growth by Loss of Ellipticity  Kim, J.*, Belytschko, T.	Verification & Validation Program at Lawrence Livermore National Laboratory: Goals, Methods, Timelines, and Issues  Logan, R.*, Nitta, C.	Gradient Based Shape Optimization of Strongly Coupled Fluid-Structure Interaction Problems  Lund, E.*, Moller, H.
05:42	Elastoplastic Constitutive Formulation for Partial Saturated Soils  Etse, G.*, Schiava, R.	A Cohesive Finite Element Method for Combined Deterministic and Stochastic Analysis of Microscopic Dynamic Fracture  Tomar, V.*, Zhou, M.	Verification & Validation at Los Alamos National Laboratory  Heath, A.*	Shape Optimization of Supercavitating Projectiles Under Water  Choi, J.*, Penmetsa, R., Gandhi, R.
06:06		On the Algorithmic Formulation of Strong Discontinuity Approaches  Mosler, J.*, Bruhns, O.		Evolutionary Shape Optimization of Crashworthy Structures  Sidhu, R., Burgueno, J., Averill, R.* , Goodman, E.

**TUESDAY, JULY 29: 4:30 – 6:30 PM**

Time 24 Min. Talks	Room: Tijeras <b>Dislocation Mechanics Session I</b> Session Chairs: Sun, L., Ghoneim, N.	Room: Aztec <b>4<sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part I</b> <b>Session VI Adaptivity I</b> Session Chairs: Erickson, J., Owen, S.	Room: Cimarron <b>Recent Developments in Multiscale Modeling</b> <b>Session III</b> Session Chairs: Sejnoha, M., Ladeveze, P.	Room: Dona Ana <b>Multiscale Modeling and Simulation of Material Behavior</b> <b>Session VI</b> Session Chairs: El Azab, A., Garikipati, K.
04:30	KEYNOTE: The Modern Framework of Anisotropic Linear Elastic Dislocation Theory and its Incorporation Into Numerical Modeling and Simulation Barnett, D.*	Unstructured Moving Mesh by a Least-Squares Finite Element Method Cai, X., Fleitas, D.*., Jiang, B., Liao, G.	KEYNOTE: Nonlocal Elasticity for Materials with Multiscale Damage Shi, J.*., Ghanem, R.	A Generalized Quasi-Continuum Method for Nanoscale Oxide Structure El-Azab, A.*., Trease, H.
04:54		Controlled Mesh Enrichments for Evolving Geometries Wan, J., Kocak, S.*., Shephard, M.		Local Quasicontinuum Density Functional Theory: an Ab-Initio Finite Element Constitutive Model Fago, M.*., Hayes, R., Ortiz, M., Carter, E.
05:18	Modeling of Deformation and Patterning in FCC Single Crystals at High Strain Rates Shehadeh, M.*., Zbib, H., Diaz de la Rubia, T., Bulatov, V.	Boundary Element Mesh Generation for Modelling Crack Problems Creci, G., Albuquerque, E., Sollero, P.*., Ferreira, J., Pavanello, R.	A Nonincremental and Multiscale Computational Strategy for Multiphysics Problems Neron, D.*., Dureisseix, D., Ladeveze, P., Schrefler, B.	Continuum Fields for Dynamically Deforming Atomistic Particle Systems Tomar, V., Shenoy, M., Liang, W., McDowell, D., Zhou, M.*
05:42	Analysis of Dislocation Nucleation from Crystal Surfaces Xu, G.*	Efficient Spacetime Meshing with Nonlocal Cone Constraints Erickson, J., Fan, Y., Haber, R., Palaniappan, J., Sullivan, J., Thite, S.*	A Homogenization Methodology for the Analysis of High Frequency Elastodynamics in Bounded Periodic Structures Hussein, M.*., Hulbert, G.	A Novel Unit-Cell Model for Closed-Cell Foams Subject to Complex Loadings Czekanski, A.*., Elbestawi, M., Meguid, S.
06:06	Parametric Dislocation Dynamics in Multi-layer Thin Films Ghoneim, N.*., Han, X., Wang, Z.	Spacetime Meshing with Adaptive Coarsening and Refinement Abedi, R., Chung, S., Erickson, J.*., Fan, Y., Haber, R., Sullivan, J., Yin, L.	Comparison of GFEM and XFEM for Problems in Complex Domains Strouboulis, T., Hidajat, R.*., Zhang, L.	Multiscale and Physical Coupling Model for Metamaterials Design and Processing Suwa, Y.*., Aizawa, T.

TUESDAY, JULY 29: 4:30 – 6:30 PM				
Time 24 Min. Talks	Room: Galisteo <b>No Session in this Room</b>	Room: Ballroom A <b>Symposium on Meshfree Methods: Part I</b>  <b>Session VI Stability</b>  Session Chairs: Belytschko, T., Dilts, G.	Room: Ballroom B <b>Symposium on Meshfree Methods: Part II</b>  <b>Session I Extended/Generalized FEM</b>  Session Chairs: Lee, S., Suzuki, K.	
04:30		KEYNOTE:  Stable Particle Methods Based on Lagrangian Kernels  Rabczuk, T.*, Belytschko, T.	KEYNOTE:  Advances in Enriched Finite Element Approximations: Interpretations of Variational Consistency  Dolbow, J.*	
04:54				
05:18		Locking-Free Stabilized Conforming Nodal Integration for Meshfree Mindlin-Reissner Plate Formulation  Chen, J., Wang, D.*	Partition of Unity Enrichment for Bimaterial Interface Cracks  Sukumar, N.*, Prevost, J., Suo, Z., Huang, Z.	
05:42		Imposing Essential Boundary Conditions in Mesh-Free Methods  Fernandez-Mendez, S.*, Huerta, A.	An Alternative to FEM and Meshfree Methods - The ALE IFEM  Gerstenberger, A.*, Zhang, L., Liu, W.	
06:06		A New Error Estimate and Its Application to Plate Problems in the EFG Method  Chung, H.*, Lee, G., Lee, T., Lee, W.	Thin Film Cracking with the Extended Finite Element Method  Huang, R.*, Liang, J., Prevost, J., Suo, Z.	

**Wednesday, July 30**  
**8:30 – 9:15 AM**

**Plenary Lecture 7**

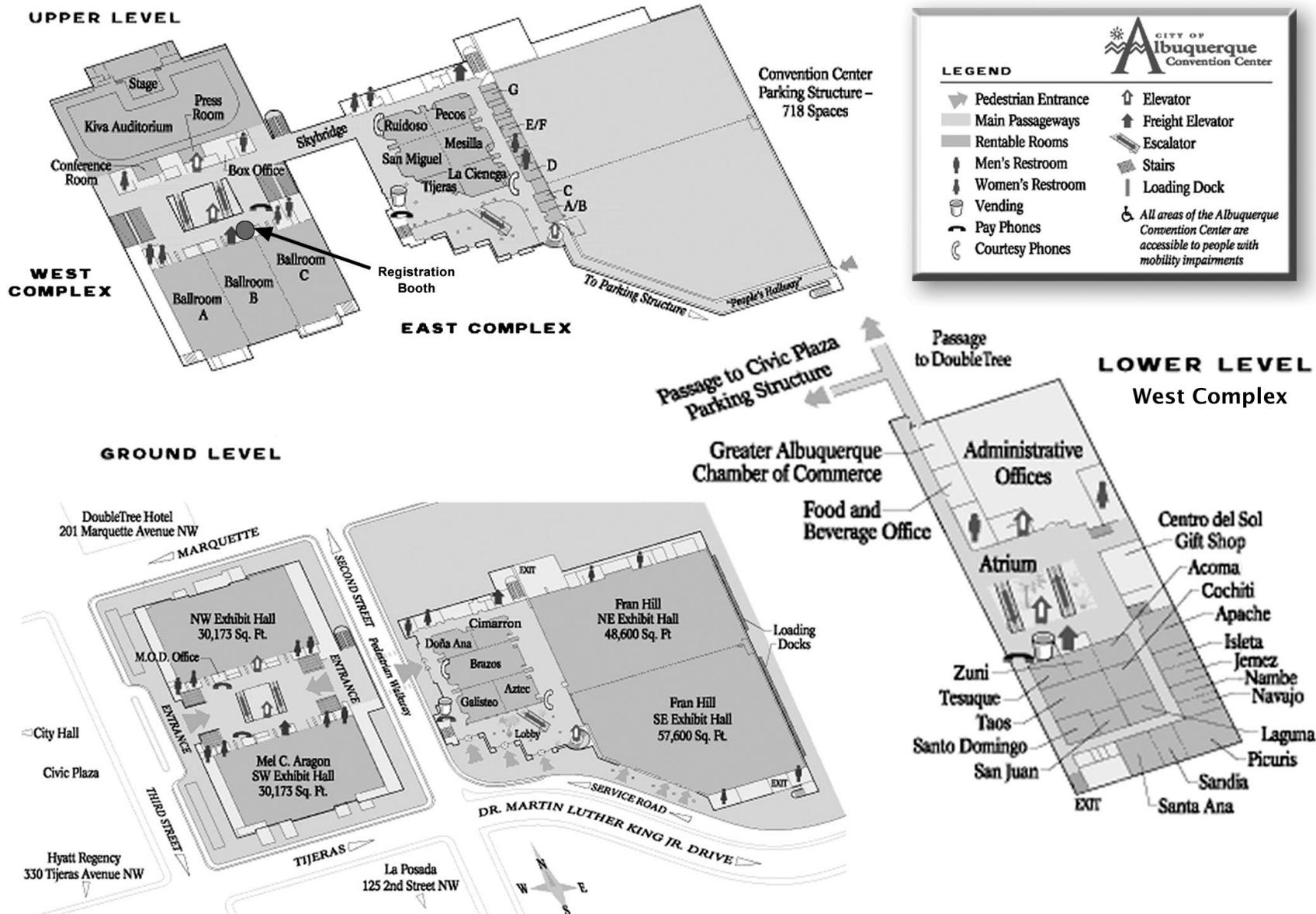
**Kiva Auditorium**



***Continuum/Discrete Representations of Fracturing Solids***

**Roger Owen**  
**University of Wales, Swansea**

# Albuquerque Convention Center Map



WEDNESDAY, JULY 30: 9:45 – 11:45 AM		
Room	Location	Technical Session Title
Acoma	W. 1 <sup>st</sup> Floor	Numerical Methods for Advection Dominated Transport : Session II
Apache	W. 1 <sup>st</sup> Floor	Computational Hydrodynamics and Free-Surface Flows : Session I
Cochiti	W. 1 <sup>st</sup> Floor	Computational Fluid Mechanics for Free and Moving Boundaries : Session IV
Isleta	W. 1 <sup>st</sup> Floor	Computational Methods for Wave Propagation : Session III
Jemez	W. 1 <sup>st</sup> Floor	Fluid Structure Interaction : Session III
Laguna	W. 1 <sup>st</sup> Floor	Computational Dynamics of Complex Fluids: Polymers, Glasses, Suspensions and Emulsions Session III Suspensions II
Nambe'	W. 1 <sup>st</sup> Floor	Advances in Computational Structural Mechanics for Department of Defense Applications : Session III
Navajo	W. 1 <sup>st</sup> Floor	Computational Bioengineering : Session III
Picuris	W. 1 <sup>st</sup> Floor	Differential Quadrature, Generalized Methods and Related Discrete Element Analysis Methods for Computational Mechanics Problems : Session I
Sandia	W. 1 <sup>st</sup> Floor	High Performance, Custom and CAS-Developed Finite Elements : Session II
Santa Ana	W. 1 <sup>st</sup> Floor	Stabilized and Multiscale Finite Element Methods : Session II
Santo Domingo	W. 1 <sup>st</sup> Floor	Advances in A Posteriori Error Estimation : Session II
Taos	W. 1 <sup>st</sup> Floor	Dynamics of Jointed Structures : Session III
Tesuque	W. 1 <sup>st</sup> Floor	Supporting Infrastructures for Computational Mechanics Applications : Session II
Zuni	W. 1 <sup>st</sup> Floor	Uncertainty Quantification : Session III Optimization Under Uncertainty
La Cienega	E. Upper level	Symposium on Large-Scale Structural Dynamics Computation : Session I
Mesilla	E. Upper level	Computational Geomechanics : Session V
Pecos	E. Upper level	Fundamentals and Applications of Cohesive Models : Session IV
Ruidoso	E. Upper level	Material Forces in Computational Defect Mechanics : Session I
San Miguel	E. Upper level	Structural Optimization - Multiphysics Problems in Shape and Topology Design Session IV Topology Optimization I
Tijeras	E. Upper level	Dislocation Mechanics : Session II
Aztec	E. Lower Level	4 <sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part I : Session VII Adaptivity II
Cimarron	E. Lower Level	Recent Developments in Multiscale Modeling : Session IV
Dona Ana	E. Lower Level	Multiscale Modeling and Simulation of Material Behavior : Session VII
Galisteo	E. Lower Level	4 <sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part II : Session III Geometry
Ballroom A	W. 3 <sup>rd</sup> Floor	Symposium on Meshfree Methods: Part I : Session VII Adaptive Methods
Ballroom B	W. 3 <sup>rd</sup> Floor	Symposium on Meshfree Methods: Part II : Session II Applications of Meshfree Methods I

WEDNESDAY, JULY 30: 9:45 – 11:45 AM				
Time 24 Min. Talks	Room: Acoma <b>Numerical Methods for Advection Dominated Transport</b> <b>Session II</b> Session Chair: Herrera, I.	Room: Apache <b>Computational Hydrodynamics and Free-Surface Flows</b> <b>Session I</b> Session Chairs: Abedi, J., Alibadi, S.	Room: Cochiti <b>Computational Fluid Mechanics for Free and Moving Boundaries</b> <b>Session IV</b> Session Chairs: Baer, T., Schunk, P.	Room: Isleta <b>Computational Methods for Wave Propagation</b> <b>Session III</b> Session Chairs: Kallivokas, L., Guddati, M.
09:45	KEYNOTE: A Broad Survey of Research on Eulerian-Lagrangian Localized Adjoint Methods Ewing, R.*	KEYNOTE: ALE and Lagrangian Finite Element Methods for Free Surface Flows Oñate, E., Garcia, J.*., Idelsohn, S.	KEYNOTE: Distributed Lagrange Multiplier-Based Fictitious Domain Methods for the Numerical Simulation of Particulate Flow Glowinski, R.*	Rayleigh Wave Correction for the BEM Analysis of Two-Dimensional Elastodynamic Problems in a Half-Space Arias, I.*., Achenbach, J. Enhancements of Continued Fraction Absorbing Boundary Conditions: Stratified Media, Boundaries with Corners and Time Discretization Issues Guddati, M.*., Zahid, M., Lim, K.
10:09	A Novel Eulerian-Lagrangian Formulation for Compositional Flow in the Subsurface Wang, H.*	Fully Coupled Numerical Simulation of Mooring Forces Aliabadi, S., Abedi, J., Watts, M.*	The Numerical Simulation of Particulate Flow for Bingham Visco-Plastic Fluids: A Fictitious Domain Approach Dean, E.*., Glowinski, R., Pan, T.	A Technique for A Posteriori Estimation of Wave Reflections Park, S.*
10:33	Using Hermite Collocation to Solve Convection-Diffusion Problems Brill, S.*	An Analysis of Shallow Water Flow Stabilized Bubble Function Osabe, M.*., Kawahara, M.	An Overlapping Grid Algorithm for Finite Element Solution of Fluid-Structure Interaction Problems Wilkes, E.*., Rao, R.	Variationally Consistent Higher Order Global Differentiability Finite Element Processes for Elastic Wave Propagation in Laminated Composites Surana, K., Maduri, R., Reddy, J.*., Tempas, P.
10:57		On the Solution of Free Surface Flows with the SPH Method Soulaimani, A., Ata, R.*	Fictitious Domain Methods to the Direct Numerical Simulation of the Lifting of Ellipsoids in the Incompressible Viscous Fluid Glowinski, R., Pan, T.*	A Coupled Multidomain Space-Time Finite Element Method to Solve the Nonlinear One-Dimensional Equations of Blood Flow in Elastic Vessels Vignon, I.*., Taylor, C.
11:21				

WEDNESDAY, JULY 30: 9:45 – 11:45 AM				
Time 24 Min. Talks	Room: Jemez <b>Fluid Structure Interaction Session III</b>  Session Chairs: Ohayon, R., Kvamsdal, T.	Room: Laguna <b>Computational Dynamics of Complex Fluids: Polymers, Glasses, Suspensions and Emulsions Session III Suspensions II</b>  Session Chairs: Morris, J., Rao, R.	Room: Nambe'’ <b>Advances in Computational Structural Mechanics for Department of Defense Applications Session III</b>  Session Chairs: O'Daniel, J., Danielson, K.	Room: Navajo <b>Computational Bioengineering Session III</b>  Session Chairs: Suh, J., Hart, R.
09:45	Parts Based FE Modeling and Mesh Updating Scheme for FSI Problems  Taki, Y.* , Seguchi, K., Michihuku, N., Ohta, T.	A New Approach to Optimal Shape Design of Frictional Contact Problems Using Variational Inequalities  Al-Dojayli, M.* , Meguid, S., Czekanski, A.	Computational Accuracy of Plasticity Constitutive Models  Brannon, R.*	KEYNOTE:  Finite Element Analysis: Bone and Eyes
10:09	Least-Squares Mesh Smoothing Algorithm to Update the Acoustic Mesh in Coupled Acoustic-Structural Analysis  Snyman, M.* , Nagtegaal, J.	3-D Contact Algorithm for Thermomechanical Analyses of Casting Processes  Haas, L.* , Laschet, G.	Adiabatic Shear Bands in the Taylor Impact Test for a Microporous Thermoviscoplastic Rod  Lear, M., Batra, R.*	Hart, R.* , Roberts, M., Coleman, J., Bellezza, A., Crawford Downs, J., Burgoyne, C.
10:33	A Fluid-Structure Interaction Analysis Using Stabilized Bubble Function Element  Matsumoto, J.* , Suzuki, T., Tezuka, A.	3-D Contact Algorithm for Thermomechanical Analyses of Casting Processes  Haas, L.* , Laschet, G.	Crack Simulation in Pneumatic Tires Using Finite Element Method  Ök, A., Özüpek, S.* , Becker, E.	Transversely Isotropic Fundamental Solution Applied to Bioengineering Problems  Noritomi, P., Sollero, P.* , Cisilino, A., Ortiz Tavara, J.
10:57	3D Burst Simulation of Pipeline Containing High-Pressure Natural Gas on PC Cluster  Yoshimura, S.* , Matsumoto, Y., Ino, M., Akiba, H.	An Efficient Model For Simulating Rolling Contact Between Tire and Ground During Sideslip  Mousseau, C.* , Harbour, R.	A Numerical Study of the Synergistic Effect on Blast-Resistant Design  Hu, W.* , Chen, Z.	Stiffness Identification in Biological Tissue  Ji, L.* , McLaughlin, J.
11:21				Effect of Polyethylene Component Thickness on Stresses in Total Ankle Arthroplasty  Smolinski, P.* , Galik, K., Conti, S., Miller, M.

**WEDNESDAY, JULY 30: 9:45 – 11:45 AM**

Time 24 Min. Talks	Room: Picuris  <b>Differential Quadrature, Generalized Methods and Related Discrete Element Analysis Methods for Computational Mechanics Problems</b>  <b>Session I</b>  Session Chairs: Chen, C., Zhitnikov, V.	Room: Sandia  <b>High Performance, Custom and CAS-Developed Finite Elements</b>  <b>Session II</b>  Session Chairs: Sze, K., Felippa, C.	Room: Santa Ana  <b>Stabilized and Multiscale Finite Element Methods</b>  <b>Session II</b>  Session Chairs: Codina, R., Coutinho, A.	Room: Santo Domingo  <b>Advances in A Posteriori Error Estimation</b>  <b>Session II</b>  Session Chairs: Peraire, J., Stewart, J.
09:45	KEYNOTE:  Generalized DQ Methods, Related Discrete Element Analysis Methods and EDQ Based Time Integration Schemes for Static and Transient Analyses  Chen, C.*	KEYNOTE;  Inelastic Dynamic Analysis of Shells with the TRIC Shell Element  Papadrakakis, M.*, Mouroutis, Z., Karapitta, L., Papachristidis, A.	Calculation of the Stabilization Parameters in Finite Element Formulations of Flow Problems  Tezduyar, T.*	A-Posteriori Error Estimates and Mesh Adaptivity for Variational Formulations of Magnetohydrodynamics with Exact Solenoidal Constraint  Barth, T.*
10:09			A Comparison of RFB and NOPG for Acoustics  Harari, I.*, Gosteev, K.	A Posteriori Error Estimation and Superconvergence for Hyperbolic and Parabolic Systems  Flaherty, J., Krivodonova, L., Lankalapalli, S.*
10:33	Local Adaptive Differential Quadrature Method for High-Order Differential Equations  Wang, Y., Zhao, Y., Wei, G.*	Discrete Model for Dynamic Fracture of Brittle Structures  Ibrahimbegovic, A.*, Delaplace, A.	Tackling Turbulent Flows with a Three- Level Finite Element Method  Gravemeier, V.*, Wall, W., Ramm, E.	The Method of Nearby Problems: An Approach for Assessing Error Estimators  Roy, C.*, Hopkins, M.
10:57	An Auto-Wave Solidification Process in Heterogeneous Media  Yanukyan, E.*	Hexahedral Solid Elements with Enhanced Strains  Piltner, R.*	On Stabilized Finite Element Methods for Advection-Diffusion-Reaction Problems with Varying Time Scales  Bochev, P.*, Gunzburger, M., Shadid, J.	Operator Recovery Error Source Detector  Lapenta, G.*
11:21	Extrapolations Methods of Hydrodynamics Problems Solving in Prelimiting Cases  Sherykhina, N.*, Zhitnikov, V.	Combining High Performance Thin Shell and Surface Crack Finite Elements for Simulation of Combined Failure Modes  Skallerud, B.*, Holthe, K., Haugen, B.	Quasi-Optimal Space-Time Finite Element Methods  Ahuja, S.*, Barbone, P.	A Posteriori Error Estimates Based on Polynomial Preserving Gradient Recovery  Zhang, Z.*

**WEDNESDAY, JULY 30: 9:45 – 11:45 AM**

Time 24 Min. Talks	Room: Taos <b>Dynamics of Jointed Structures</b> <b>Session III</b>  Session Chairs: Petrov, E., Hinkle, J.	Room: Tesuque <b>Supporting Infrastructures for Computational Mechanics Applications</b>  <b>Session II</b>  Session Chair: Edwards, H., Wittum, G.	Room: Zuni <b>Uncertainty Quantification</b>  <b>Session III</b> <b>Optimization Under Uncertainty</b>  Session Chair: Wojtkiewicz, S.	Room: La Cienega <b>Symposium on Large-Scale Structural Dynamics Computation</b>  <b>Session I</b>  Session Chairs: Bennighof, J., Lehoucq, R.
09:45	A Continuum Model of Interfacial Dissipation with Time-varying Tangential and Normal Loads  Quinn, D.*	KEYNOTE:  FEMTown: a Generic Framework for Parallel Multi-Physics Finite-Element Simulations  Knapen, T.* , Meerbergen, K., Lielens, G., Ploumhans, P.	Formulations for Surrogate-Based Optimization Under Uncertainty  Eldred, M.* , Giunta, A., Wojtkiewicz, Jr., S., Trucano, T.  Role of Spatial Correlation in Optimization Under Uncertainty  Igusa, T.* , Wan, Z.	Formulations for Surrogate-Based Optimization Under Uncertainty  Sotelino, E.* , Dere, Y.  Error Bounds for Rayleigh-Ritz Model Reduction  Lecomte, C.* , McDaniel, J., Barbone, P.
10:09	Solving Discrete Models of Interfacial Dissipation: Complementarity vs. Regularization  Segalman, D.* , Quinn, D.			
10:33	A General Joint Interface Element Considering Impact and Friction Damping  Song, Y.* , Bergman, L., Vakakis, A.	Parallel Multi-Physics Integration Frameworks for Virtual Rocket Science  Campbell, M., Jiao, X., Kale, L., Lawlor, O., de Sturler, E.*	Computational Efficiency in Probabilistic Optimization  Mahadevan, S.* , Smith, N.	Adaptive Finite Element Modeling of Wave Propagation in Solids  Yue, Z.* , Robbins, D.
10:57	Modeling of Unilateral Contact Conditions with Application to Aerospace Systems  Bauchau, O.* , Rodriguez, J., Bottasso, C.	Multi-Physics Coupling and the Nevada FEM Software Framework  Drake, R.*	Stochastic Simulation Methods  Allen, G.* , Marczyk, J.	The Generalized Global-Basis (GGB) Method  Waisman, H.* , Fish, J., Tuminaro, R., Shadid, J.,
11:21	Coulomb Friction and Joint Constraints in Multi-Body Dynamics Using ABAQUS  Fox, D.* , Oancea, V.	An Infrastructure for Parallel Multi-Physics Mechanics Simulations  Parker, S.* , Guilkey, J., Harman, T.		

WEDNESDAY, JULY 30: 9:45 – 11:45 AM				
Time 24 Min. Talks	Room: Mesilla <b>Computational Geomechanics</b> <b>Session V</b>  Session Chairs: Borja, R., Schreyer, H.	Room: Pecos <b>Fundamentals and Applications of Cohesive Models</b>  <b>Session IV</b>  Session Chairs: Guzina, B., Paulino, G.	Room: Ruidoso <b>Material Forces in Computational Defect Mechanics</b>  <b>Session I</b>  Session Chairs: Menzel, A., Govindjee, S.	Room: San Miguel <b>Structural Optimization - Multiphysics Problems in Shape and Topology Design IV: Topology Optimization</b>  <b>Session I</b>  Session Chair: Kim, Y.
09:45	KEYNOTE:  Elastic-Plastic-Failure Constitutive Modeling of Geological Materials  Schreyer, H.* , Sulsky, D.	KEYNOTE:  Cohesive Fracture Modeling of Elastic-Plastic Crack Growth in Functionally Graded Materials  Paulino, G.* , Jin, Z., Dodds, Jr., R.	KEYNOTE:  Configurational Forces and Evolving Interfaces: From Grain Boundaries to Epitaxial Growth  Gurtin, M.*	Composite Structural Design in the Presence of Stress Constraints  Lipton, R.* , Stuebner, M.  A Topology Optimization Model to Simulate Bone Remodeling Around Hip Prostheses  Fernandes, P., Folgado, J., Rodrigues, H.*
10:09	Strain Localization in Three-Invariant Plasticity Models with Isotropic and Kinematic Hardening  Foster, C.* , Regueiro, R., Borja, R., Fossum, A.	Modeling Composites with Adaptively Integrated Cohesive Zone Models  Tippett, T.* , Beyerlein, I., Williams, T.	Material Forces in Elasticity and Strength-of-Materials  Kienzler, R.* , Herrmann, G.	On Globally Stable Singular Truss Topologies  Evgrafov, A.*
10:33	A Rigid Model for Studying Statistics and Dynamics of Elongated Grains  Grønbech-Jensen, N.* , Jeremic, B.	Micromechanical Modeling of Energy to Failure for Randomly Oriented Short Fiber Composites  Simunovic, S., Allen, Jr., J.* , Starbuck, J., Nukala, P.	Material Forces in Mass Transport  Garikipati, K.* , Arruda, E., Grosh, K.	Topology Optimization of Structures or Periodic Solids with Linearized Elastic Buckling Criterion  Neves, M.* , Rodrigues, H., Guedes, J., Sigmund, O., Bendsoe, M.
10:57	Von Neumann Analysis of Generalized Reproducing Kernel Regularization in Strain Localization Problems  Chen, J., Zhang, X.* , Belytschko, T.	Simulation of Shaped Ductile Fiber Pullout Using a Mixed Cohesion and Friction Model  Tsai, J.* , Patra, A., Wetherhold, R.	Material Force Method for Evaluating the Material and Dissipation Forces for a Crack in an Inelastic Body  Nguyen, T., Govindjee, S.* , Klein, P., Gao, H.	A New Formulation for the Design of Extreme Materials Using Topology Optimization  Vemaganti, K.* , Rakshit, A.
11:21				

**WEDNESDAY, JULY 30: 9:45 – 11:45 AM**

Time	Room: Tijeras <b>Dislocation Mechanics Session II</b>  Session Chair: Xu, G.	Room: Aztec <b>4<sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part I</b>  <b>Session VII Adaptivity II</b>  Session Chairs: Quadros, R., Shepard, M.	Room: Cimarron <b>Recent Developments in Multiscale Modeling</b>  <b>Session IV</b>  Session Chairs: Askes, H., Papadopoulos, P.	Room: Dona Ana <b>Multiscale Modeling and Simulation of Material Behavior</b>  <b>Session VII</b>  Session Chairs: Zimmerman, J., Zhou, M.
09:45	KEYNOTE:  Statistical Dislocation Dynamics  El-Azab, A.*	Skeleton-Based Computational Method for Generation of 3D Finite Element Mesh Sizing Function  Quadros, W.*, Shimada, K., Owen, S.	KEYNOTE:  Multi-Level Computational Model for Fiber Reinforced Composites with Interfacial Debonding  Ghosh, S., Raghavan, P.*, Li, S., Jie, B.	Multiscale Wavelet-Based Homogenization of Heterogeneous Media  Mehraeen, S.*, Chen, J.  Characterization of the Mechanical Behaviour of Materials in the Tensile Test: Experiments and Simulation  Celentano, D.*
10:09	J-Integral and Geometrically Necessary Dislocations in Nonlinear Plastic Deformation  Shi, M.*, Huang, Y., Gao, H.	Simplifying Tetrahedral Meshes with Scalar Data Fields  Zhou, Y.*, Garland, M.	Bridging the Discrete to Continuum  Evans, W.*, Fish, J.	A Multiscale Hybrid Method for Materials Containing Defects and Inhomogeneities  Liu, W.*, Xin, X.
10:33	Dislocation Dynamics Simulations of Plasticity in Thin Films: Dislocations Intersecting Free Surfaces  Tang, M.*, Cai, W., Bulatov, V., Xu, G.	Refinement of Finite Element Approximations on Tetrahedral Meshes Using Charms  Endres, L.*, Krysl, P.	A Hybrid Continuum/Tight-Binding Analysis to Study The Effect of Mechanical Deformation on the Electrical Property of Carbon Nanotubes  Liu, B.*, Johnson, H., Jiang, H., Huang, Y.	
10:57	A Dislocation and Point Force Approach to the 2-D Fracture Analysis of the General Anisotropic Solids  Denda, M.*	Adaptive Mesh Refinement in Accelerator Modeling with OMEGA3P  Luo, Y., Malik, I., Li, Z., Shephard, M.*, Ko, K.	Nonstandard Inverse Problems in Micro-Macro Mechanics  Zohdi, T.*	
11:21				

**WEDNESDAY, JULY 30: 9:45 – 11:45 AM**

Time 24 Min. Talks	Room: Galisteo <b>4<sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part II</b> <b>Session III Geometry</b> Session Chairs: White, D., Burns, S.	Room: Ballroom A <b>Symposium on Meshfree Methods: Part I</b> <b>Session VII Adaptive Methods</b> Session Chairs: Chen, Z., De, S.	Room: Ballroom B <b>Symposium on Meshfree Methods: Part II</b> <b>Session II Applications of Meshfree Methods I</b> Session Chairs: Dolbow, J., Wang, H.	
09:45	Surface Generation from Point Clouds on Surface Taniguchi, T.* , Kodani, T., Moriwaki, K.	KEYNOTE: A Dual Particle Meshfree Method Liberky, L.* , Randles, P.	Gradient Plasticity with the Nodally Integrated Natural Element Method Yoo, J.* , Moran, B. Meshless Discretization of Stress-Space and Strain-Space Gradient Models Askes, H.* , Pamin, J., Tsagarakis, I.	
10:09	Geometric Modeling for Finite Element Using Multi-Regions and Parametric Surfaces Lira, W., Miranda, A., Coelho, L., Cavalcante-Neto, J., Martha, L.*			
10:33	An Efficient 3D Volume Reconstruction Method from Generally Classed Planar Contours Moore, R.* , Saigal, S., Rohrer, G.	Geometrically Adaptive Integration over Meshfree Domains Tsukanov, I.* , Freytag, M., Shapiro, V.	Application of Least-Squares Meshfree Method to Metal Forming Analysis Kwon, K., Park, S., Youn, S.*	
10:57	Image Based Analytic Surface Representation and Mesh Generation Bekkers, E.* , Taylor, C.	A Coupled Finite Element and Mesh-free Method for Solid and Shell Dynamic Explicit Analysis Wu, C.* , Guo, Y., Botkin, M., Wang, H.	A New Nodal Moving Least-Square Method in Finite Element Approximation Setting Choi, Y., Kwak, B.*	
11:21	Automatic Linearization During Multiple-Material Surface Mesh Generation Sullivan, Jr., J.* , Huang, W., Zhang, Q., Wu, Z.	The Meshless Integral Method: The Effects of Support Domain, Subdomain, Nodal Density and Monomial Basis Ma, J., Xin, X.* , Bodin, A., Krishnaswami, P.	Crack Growth Analysis Using Mesh Superposition Method and X-FEM Nakasumi, S.* , Suzuki, K., Ohtsubo, H.	

**Wednesday, July 30**  
**1:00 – 1:45 PM**

**Wednesday, July 30**  
**1:00 – 1:45 PM**

**Plenary Lecture 8**

**Ballroom A**



*Computational Engineering Sciences in the  
21<sup>st</sup> Century*

**Thomas Bickel, Sandia National Laboratories**

**Plenary Lecture 9**

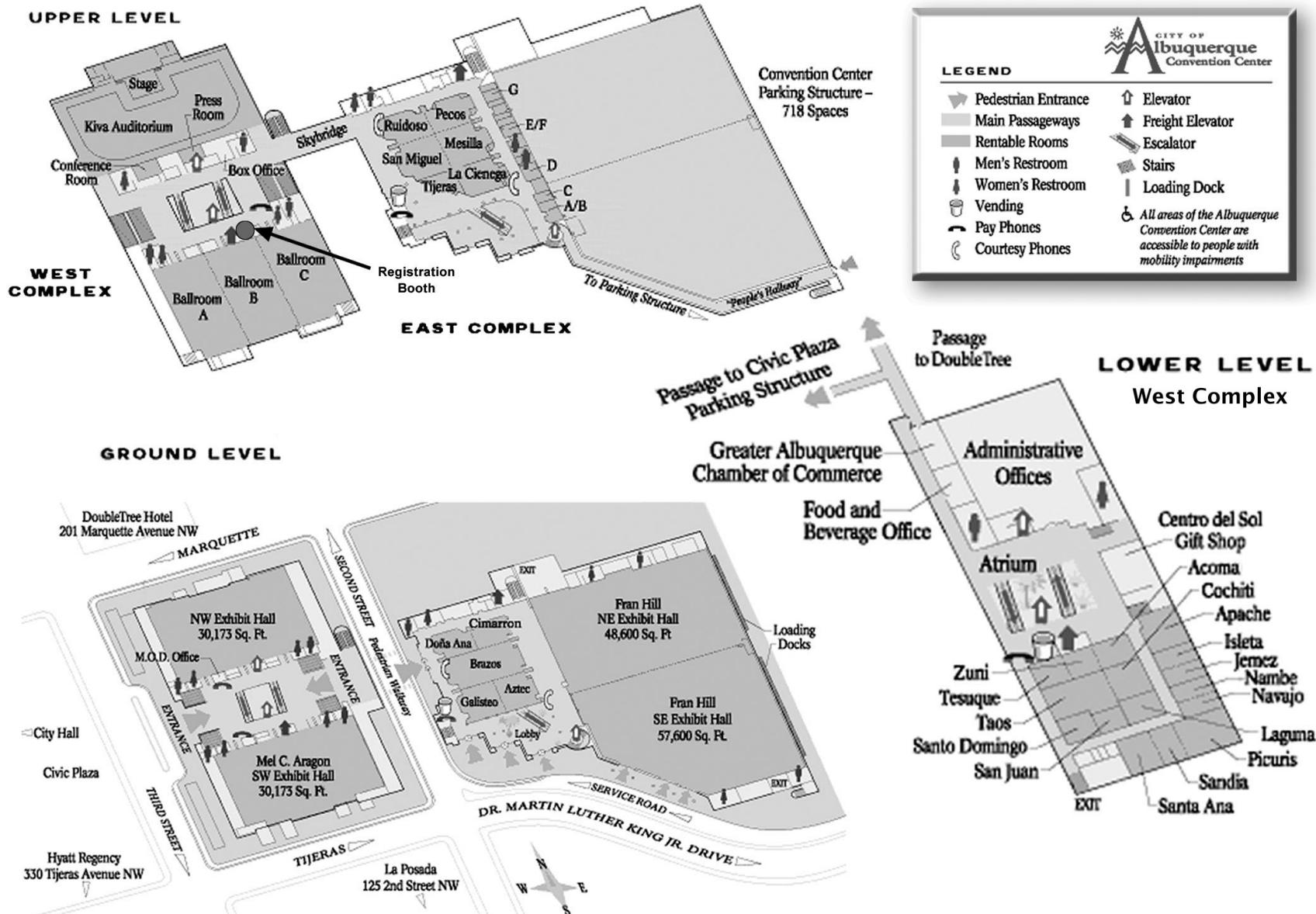
**Ballroom B**



*Analysis and Design of Elastodynamic  
Waveguides and Filters*

**Gregory Hulbert, University of Michigan**

# Albuquerque Convention Center Map



**WEDNESDAY, JULY 30: 2:00 – 4:00 PM**

<b>Room</b>	<b>Location</b>	<b>Technical Session Title</b>
Acoma	W. 1 <sup>st</sup> Floor	Numerical Methods for Advection Dominated Transport : Session III
Apache	W. 1 <sup>st</sup> Floor	Computational Hydrodynamics and Free-Surface Flows : Session II
Cochiti	W. 1 <sup>st</sup> Floor	Computational Fluid Mechanics for Free and Moving Boundaries : Session V
Isleta	W. 1 <sup>st</sup> Floor	Computational Methods for Wave Propagation : Session IV
Jemez	W. 1 <sup>st</sup> Floor	Fluid Structure Interaction : Session IV
Laguna	W. 1 <sup>st</sup> Floor	Computational Dynamics of Complex Fluids: Polymers, Glasses, Suspensions and Emulsions Session IV Polymer I
Nambe'	W. 1 <sup>st</sup> Floor	Advances in Computational Structural Mechanics for Department of Defense Applications : Session IV
Navajo	W. 1 <sup>st</sup> Floor	Computational Bioengineering : Session IV
Picuris	W. 1 <sup>st</sup> Floor	Differential Quadrature, Generalized Methods and Related Discrete Element Analysis Methods for Computational Mechanics Problems : Session II
Sandia	W. 1 <sup>st</sup> Floor	High Performance, Custom and CAS-Developed Finite Elements : Session III
Santa Ana	W. 1 <sup>st</sup> Floor	Stabilized and Multiscale Finite Element Methods : Session III
Santo Domingo	W. 1 <sup>st</sup> Floor	Advances in A Posteriori Error Estimation : Session III
Taos	W. 1 <sup>st</sup> Floor	Dynamics of Jointed Structures : Session IV
Tesuque	W. 1 <sup>st</sup> Floor	Supporting Infrastructures for Computational Mechanics Applications : Session III
Zuni	W. 1 <sup>st</sup> Floor	Uncertainty Quantification : Session IV Computational Stochastic Mechanics
La Cienega	E. Upper level	Symposium on Large-Scale Structural Dynamics Computation : Session II
Mesilla	E. Upper level	Computational Geomechanics : Session VI
Pecos	E. Upper level	Fundamentals and Applications of Cohesive Models : Session V
Ruidoso	E. Upper level	Material Forces in Computational Defect Mechanics : Session II
San Miguel	E. Upper level	Structural Optimization - Multiphysics Problems in Shape and Topology Design Session V Topology Optimization II
Tijeras	E. Upper level	Dislocation Mechanics : Session III
Aztec	E. Lower Level	4 <sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part I Session VIII Mesh Quality Measures
Cimarron	E. Lower Level	Recent Developments in Multiscale Modeling : Session V
Dona Ana	E. Lower Level	
Galisteo	E. Lower Level	4 <sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part II Session IV Parallel Mesh Generation
Ballroom A	W. 3 <sup>rd</sup> Floor	Symposium on Meshfree Methods: Part I : Session VIII Fracture/Discontinuities
Ballroom B	W. 3 <sup>rd</sup> Floor	Symposium on Meshfree Methods: Part II : Session III Applications of Meshfree Methods II



WEDNESDAY, JULY 30: 2:00 – 4:00 PM				
Time 24 Min. Talks	Room: Acoma <b>Numerical Methods for Advection Dominated Transport</b> <b>Session III</b> Session Chair: Ewing, R.	Room: Apache <b>Computational Hydrodynamics and Free-Surface Flows</b> <b>Session II</b> Session Chairs: Alibadi, S., Abedi, J.	Room: Cochiti <b>Computational Fluid Mechanics for Free and Moving Boundaries</b> <b>Session V</b> Session Chairs: Baer, T., Schunk, P.	Room: Isleta <b>Computational Methods for Wave Propagation</b> <b>Session IV</b> Session Chairs: Guddati, M., Kallivokas, L.
02:00	KEYNOTE: Finite Element Methods for Fluid Dynamics with Moving Boundaries and Interfaces Tezduyar, T.*	KEYNOTE: Robust Tracking of Free Surface in the Presence of Curved Vessel Walls Behr, M.*	A Reduced Order Model of Synthetic Jet Actuators Yamaleev, N.*, Carpenter, M.	A Spacetime Discontinuous Galerkin Finite Element Method for Wave Propagation and Scattering in Solids Abedi, R.* , Fan, Y., Hawker, M., Yin, L., Haber, R.
02:24			Computation and Sub-Microsecond Visualization of Finite Time Singularities During Interface Rupture for Testing Free Surface Codes and Developing Scaling Theories of Pinch-Off Basaran, O.* , Suryo, R., Doshi, P., Chen, A., Notz, P.	Adaptive Finite Element Simulation of Elastic Wave Propagation With Charms Trivedi, A.* , Krysl, P.
02:48	Error Control and Adaptive Meshs for Finite Volume Approximations of Convection-Diffusion-Reaction Problems Lazarov, R.*	Numerical Analyses of Free Surface Flow with the Advanced VOF Method Using Stabilized Bubble Function Element Matsumoto, J.* , Suzuki, T., Tezuka, A.	3D Airway Closure: A Non-Axisymmetric, Fluid-Elastic Instability Hazel, A.* , White, J., Heil, M.	A New Multiscale Computational Approach for Medium-Frequency Vibrations on a Large Frequency Range Ladevèze, P., Rouch, P.* , Riou, H.
03:12	The Design of an Efficient and Reliable Streamline Method for Compositional Reservoir Simulation Gerritsen, M.* , Jessen, K., Orr Jr., F., Mallison, B.	Numerical Simulation of Flotation Using Finite Element Method Fuller, A.* , Abedi, J., Aliabadi, S.	Eulerian Versus Updated Lagrangian Algorithms for Film Casting Smith, S.* , Stolle, D.	A Velocity Post-Processing for the Helmholtz Equation Paulino de Romero, R., Rochinha, F.*
03:36		Optimal Control of Pollutant Concentration in Shallow Water Flow Kobayashi, J.* , Kawahara, M.	Modeling Effects of Bath Stirring in LIGA Electrodeposition Chen, K.* , Evans, G.	Adaptive Modeling of Wave Propagation in Heterogeneous Elastic Materials Romkes, A.* , Oden, J.

**WEDNESDAY, JULY 30: 2:00 – 4:00 PM**

Time 24 Min. Talks	Room: Jemez <b>Fluid Structure Interaction</b> <b>Session IV</b>	Room: Laguna <b>Computational Dynamics of Complex Fluids: Polymers, Glasses, Suspensions and Emulsions</b> <b>Session IV</b> <b>Polymer I</b>	Room: Nambe'’ <b>Advances in Computational Structural Mechanics for Department of Defense Applications</b> <b>Session IV</b>	Room: Navajo <b>Computational Bioengineering</b> <b>Session IV</b>
	Session Chairs: Kvamsdal, T., Ohayon, R.	Session Chairs: Finlayson, B., Grillet, A.	Session Chair: Littlefield, D.	Session Chairs: Raghavan, M., Smolinski, P.
02:00	A Spectral-Element Method for Modeling Cavitation in Transient Fluid-Structure Interaction  Sprague, M.*, Geers, T.	Structure Formation in Flows of Liquid Crystalline Polymers  Wang, Q.*, Forest, M., Cui, Z.	A First-Principles Abrasion Algorithm for Projectile Mass Loss During Penetration  Dunn, P.*, Holmes, B.	KEYNOTE:  Multiscale Co-simulation in the Cardiovascular System: Integration from Molecules to Organs
02:24	A Spectral-Element Method for Modeling Cavitation in Transient Fluid-Structure Interaction: 3-D Evaluation  Sprague, M., Geers, T.*	Linear Rheology of Binary Melts From a Phenomenological Tube Model of Entangled Polymers  Frischknecht, A.*, Milner, S.	A Technique for Modeling Material Interfaces in Multi-Material CSM Applications  Littlefield, D.*	Kaazempur-Mofrad, M.*, Kamm, R.
02:48	Algorithms for Massively Parallel Structural Acoustics  Walsh, T.*, Reese, G., Sumali, A., Pierson, K., Dohner, J.	Developments Toward DPD Simulation of Entangled Polymer Melts  Pan, G., Manke, C.*	Discrete Singular Convolution for the Prediction of High Frequency Vibration of Plates  Wei, G.*, Zhao, Y., Xiang, Y.	A One-Dimensional Finite Element Method Coupled to Morphometry-Based Downstream Trees for Simulation of Blood Flow in Pulmonary Arteries  Spilker, R.*, Parker, D., Feinstein, J., Taylor, C.
03:12		Finite Element Simulation of Viscoelastic Fluid Flow Through 4:1 Contraction  Nayak, H.*, Carey, G.	Reduction of a 2nx2n Hamiltonian-Matrix Eigenproblem to a nxn Standard Eigenproblem  Brown, III, H.*	Efficient Computational Methods for the Investigation of Vascular Disease  Mueller, J.*, Nagrath, S., Li, X., Jansen, K., Shephard, M.
03:36		Direct Numerical Simulations of Turbulent Viscoelastic Channel Flow: Towards a Better Understanding of Polymer-Induced Drag Reduction  Beris, A.*, Housiadas, K.		Determination of Residual Stress in Arteries: a Computational Approach  Raghavan, M.*, Trivedi, S., Nagaraj, A., McPherson, D., Chandran, K.

**WEDNESDAY, JULY 30: 2:00 – 4:00 PM**

Time 24 Min. Talks	Room: Picuris  <b>Differential Quadrature, Generalized Methods and Related Discrete Element Analysis Methods for Computational Mechanics Problems</b>  <b>Session II</b>  Session Chairs: Chen, C., Sherykhina, N.	Room: Sandia  <b>High Performance, Custom and CAS-Developed Finite Elements</b>  <b>Session III</b>  Session Chairs: Felippa, C., Sze, K.	Room: Santa Ana  <b>Stabilized and Multiscale Finite Element Methods</b>  <b>Session III</b>  Session Chairs: Harari, I., Jansen, K.	Room: Santo Domingo  <b>Advances in A Posteriori Error Estimation</b>  <b>Session III</b>  Session Chairs: Stewart, J., Peraire, J.
	New Finite Element Method Based on Reformulation of Discrete Element Method  Hori, M.* , Oguni, K.	Reexamination of the Patch Test for Nonconforming Elements  Kikuchi, N.* , Sekiguchi, M.	Finite Element Approximation of the Three-Field Elasticity Problem Stabilized with Orthogonal Subscales  Codina, R.*	Decomposition of Solutions of Elliptic Problems via A Posteriori Error Analysis  Estep, D.*
02:00	GIQ for Volterra Equations of the Second Kind  Mestrovic, M.*	A Distortion Insensitive Quadrilateral Finite Element Based on the Assumed Stress Concept in Clough's 1960 Paper  Sekiguchi, M.* , Kikuchi, N.	A Segregated Stabilized Formulation for Compressible Flows  Hauke, G.* , Landaberea, A., Garmendia, I., Canales, J.	Robustness of A-Posteriori Estimators with Respect to Very High Orthotropy  Strouboulis, T., Wang, D.* , Babuska, I.
02:24	A Generalized Method for Solving Boundary-Value Problem in Fluid Mechanics with Experimentally Determined Boundary Conditions  Rasuo, B.*	Numerically Generated Tangent Matrices for Integrating Nonlinear Analysis Capabilities of Differing Formulations and Implementations  Pierson, K.* , Park, K.	A Stabilized Volume-Averaging Finite Element Method for Flow in Porous Media and Binary Alloy Solidification Systems  Zabaras, N.* , Samanta, D.	A Posteriori Error Estimates for the Stokes Problem  Nobile, F.*
02:48	Gravity Fluid Flow Past a Board with Appearance of a Vortex  Zhitnikov, V.* , Sherykhina, N., Oshmarin, A.	Development of the MIN-N Family of Triangular Anisoparametric Mindlin Plate Elements  Liu, Y.* , Riggs, H.	A Continuous/Discontinuous Galerkin Method for Gradient Damage Models  Molari, L.* , Garikipati, K.	A Posteriori Error Estimation for Second-Order Hyperbolic Problems  Adjerid, S.*
03:12		A Reproducing Petrov-Galerkin Finite Element Formulation Immune to Mesh Distortion Effects  Rajendran, S.*	A Multiscale View of the Galerkin Method in One Dimension: The p Version of the FEM Does Not Require Stabilization  Bottasso, C., Detomi, D.*	Moving Grids for Problems of Gas Dynamics  Lipnikov, K.* , Shashkov, M.
03:36				

**WEDNESDAY, JULY 30: 2:00 – 4:00 PM**

Time 24 Min. Talks	Room: Taos <b>Dynamics of Jointed Structures</b> <b>Session IV</b>  Session Chairs: Bergman, L., Segalman, D.	Room: Tesuque <b>Supporting Infrastructures for Computational Mechanics Applications</b> <b>Session III</b>  Session Chairs: Edwards, H., Wittum, G.	Room: Zuni <b>Uncertainty Quantification</b> <b>Session IV</b> <b>Computational Stochastic Mechanics</b>  Session Chair: Ghanem, R.	Room: La Cienega <b>Symposium on Large-Scale Structural Dynamics Computation</b> <b>Session II</b>  Session Chairs: Lehoucq, R., Bennighof, J.
02:00	Simulation of Large Space Truss Structures With Semi-Active Friction Joints  Gaul, L.* , Albrecht, H., Wirnitzer, J.	Using MPPS for On-Line Visualization of Large-Scale Scientific Simulations  Lampe, M.*	KEYNOTE:  On Methods for the Analysis of Large FE Systems Subjected to Stochastic Dynamic Excitation  Schueller, G.*	An Introduction to Automated Multi-Level Substructuring in Structural Dynamics  Bennighof, J., Lehoucq, R.*
02:24	Forced Response Analysis of Large- Scale Models of Structures with Clearances, Interferences and Friction Contacts at Joints  Petrov, E.* , Ewins, D.	Sundance: A High-Level Toolkit for Efficient, Parallel PDE Simulation and Optimization  Long, K.*		Automated Multilevel Substructuring: Issues in Large-Scale Vibration Analysis  Bennighof, J.* , Muller, M., Kim, M., Kim, C.
02:48	Developments of Solution Algorithms for Dynamic Analysis of Heterogeneous Jointed Structures  Yue, X.* , Park, K.	Framework for Adaptive Finite Element Simulations: Mesh Refinement Based on CHARMS  Krysl, P.* , Trivedi, A., Zhu, B.	Uniform Sample Distributions for Optimization and Uncertainty  Johnson, E.* , Wojtkiewicz, S.	A Comparison of the Lanczos Method and Automated Substructuring for Eigenvalue Analysis  Komzsik, L.*
03:12	Large Structural Dynamics Models with Nonlinear Damping: Simulation via Reduced Order Models  Kim, J., Burton, T.*	Supporting Parallel Adaptive hp Schemes  Bauer, A.* , Patra, A.	Integration of Stochastic Finite Element Capabilities into Analysis Software  Ghanem, R., Abras, J.* , Wojtkiewicz, S., Reese, G.	A Comparison of Eigensolvers for Large- Scale Three-Dimensional Modal Analysis  Hetmaniuk, U.* , Lehoucq, R.
03:36		The deal.II Library: Supporting Adaptivity and other Modern Finite Element Trends  Bangerth, W.*	Spectral Methods for Uncertainty Quantification in Reacting-Flow Systems  Reagan, M.* , Najm, H., Knio, O., Ghanem, R., Le Maître, O.	Flexibility-Based Substructural Vibration Analysis  Park, K.* , Park, Y.

**WEDNESDAY, JULY 30: 2:00 – 4:00 PM**

Time 24 Min. Talks	Room: Mesilla <b>Computational Geomechanics</b> <b>Session VI</b>  Session Chairs: Papavassiliou, D., Jensen, R.	Room: Pecos <b>Fundamentals and Applications of Cohesive Models</b>  Session V  Session Chairs: Belytschko, T., Paulino, G.	Room: Ruidoso <b>Material Forces in Computational Defect Mechanics</b>  Session II  Session Chairs: Govindjee, S., Menzel, A.	Room: San Miguel <b>Structural Optimization - Multiphysics Problems in Shape and Topology Design</b>  <b>Session V</b> <b>Topology Optimization II</b>  Session Chair: Diaz, A.
02:00	Modeling of Solids Using Discrete Elements Bonded with Co-rotational Beam Elements  Jensen, R.* , Preece, D.	Mode III Dynamic Crack Growth with a Rate Dependent Cohesive Zone and a Combined Critical Stress-Cod Criterion  Costanzo, F.* , Walton, J.	Arbitrary Lagrangian-Eulerian Formulation Based on the Coupled Spatial and Material Setting of Continuum Mechanics  Askes, H.* , Kuhl, E., Steinmann, P.	Multiscale Topology Optimization Using Wavelets  Kim, Y.*
02:24	Numerical Analyses of Localisation of Deformations  Tejchman, J.*	Cohesive Zone Modeling of Dynamic Failure in Functionally Graded Materials  Zhang, Z.* , Paulino, G.	Material Forces in Computational Mechanics : Variational ALE Method  Thoutireddy, P.* , Ortiz, M.	A Method for Continuous Approximation of Material Distribution for Topology Optimization, and its Application to Compliant Mechanism Designs  Matsui, K.* , Terada, K., Hosoyama, A., Nishiwaki, S.
02:48	Prediction of Formation Properties and Uncertainty with Pore Network Modeling  Papavassiliou, D.* , Neeman, H.	Dynamic Crack Propagation in Thin-Walled Structures  Zavattieri, P.*	Application of the Material Force Method to Dissipative Materials  Denzer, R.* , Liebe, T., Steinmann, P.	Continuum Topology Design of Hinge-Free Compliant Mechanisms  Rahmatalla, S.* , Swan, C.
03:12	Fluid-Induced Fracture Initiation and Propagation in Geologic Systems: A Discrete Analysis  Boutt, D.* , McPherson, B., Cook, B., Williams, J.	Convergence Results for a Proposed Initially Rigid Cohesive Model  Sam, C.* , Papoulia, K.	On the Evaluation of Configurational Forces with Enriched Finite Element Approximations Using Domain Integrals  Dolbow, J., Fried, E.* , Ji, H.	Continuum-Based Topology Design Optimization of Nonlinear Structures Using Reproducing Kernel Method  Cho, S.* , Kwak, J., Ha, Y.
03:36		A Rate-Dependent Cohesive Continuum Model for the Study of Crack Dynamics  Nguyen, T.* , Govindjee, S., Klein, P., Gao, H.		

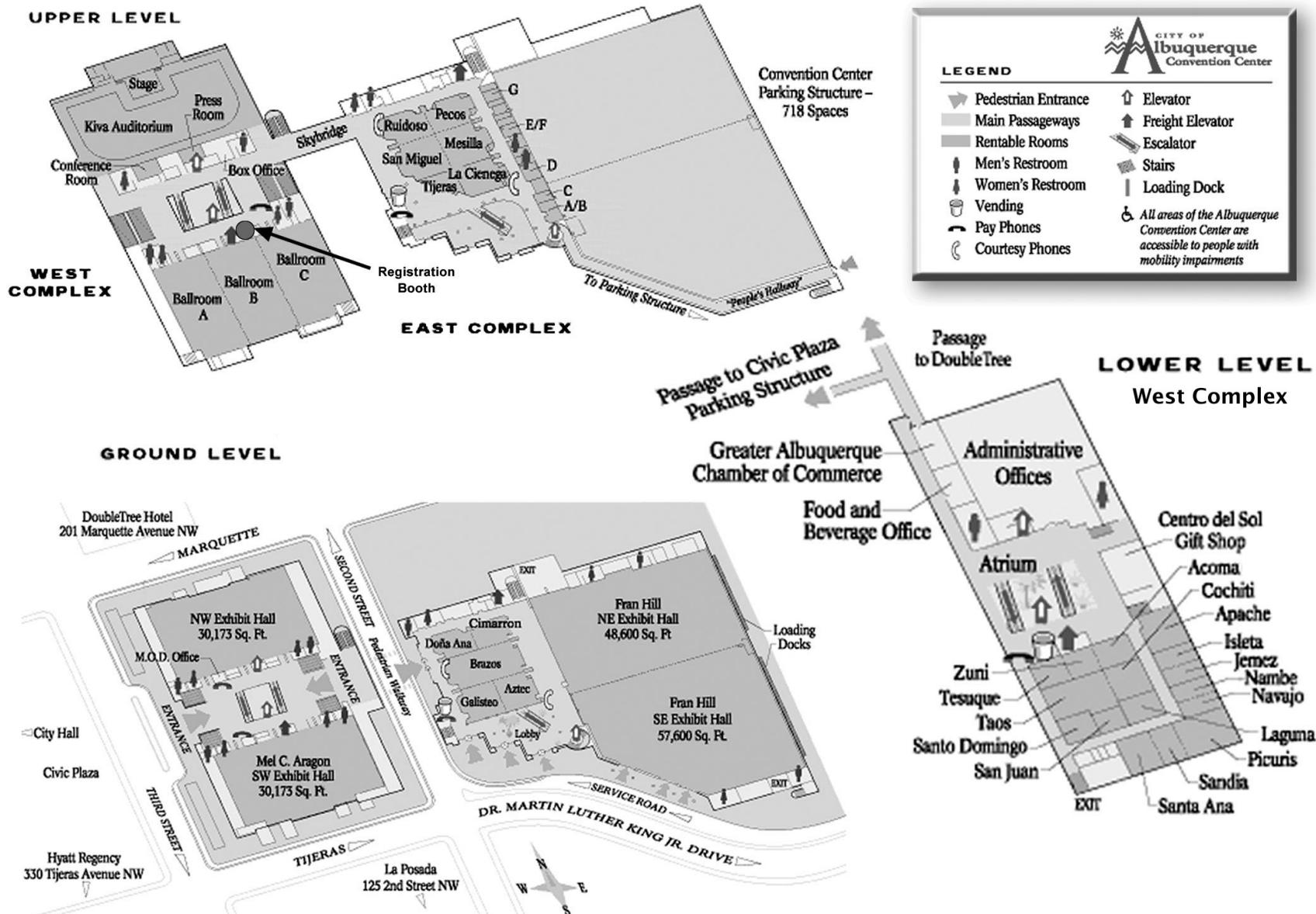
**WEDNESDAY, JULY 30: 2:00 – 4:00 PM**

Time 24 Min. Talks	Room: Tijeras <b>Dislocation Mechanics Session III</b> Session Chair: Ghoneim, N.	Room: Aztec <b>4<sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part I</b> <b>Session VIII Mesh Quality Measures</b> Session Chairs: Freitag-Diachin, L., Owen, S.	Room: Cimarron <b>Recent Developments in Multiscale Modeling</b> <b>Session V</b> Session Chairs: Evans, W., Strouboulis, T.	Room: Dona Ana <b>No Session in this Room</b>
02:00	KEYNOTE:  Effects of Non-Glide Stresses on Plastic Flow Arising From Non-Planar Dislocation Core Structures (A Case Study in the Atomistic – Continuum Connection)  Bassani, J.*	A Comparison of Local and Global Formulations of the Mesh Optimization Problem Using the Feasible Newton Solution Method  Freitag-Diachin, L.* , Knupp, P., Munson, T., Shontz, S.	Generalized FEM Using Mesh-Based Handbooks: Application to Problems Set in Domains with a Large Number of Voids, Inclusions, and Cracks  Strouboulis, T.* , Zhang, L., Babuska, I.	
02:24		A New Quality Measure to Evaluate Unstructured 2D-Meshes and Triangular Elements: the Perimetral Ratio  Manoel dos Santos, A., Scheer, S.*	A Computational Approach to Handle Complex Microstructure Geometries  Moes, N.* , Cloirec, M., Cartraud, P., Remacle, J.	
02:48	Linking Dislocation Dynamics to a Continuum Crystal Plasticity Formulation  Arsenlis, A.* , Tang, M.	Integrating Quality Measures with Element Approval  Hakula, H.* , Lehtinen, J.	Multi-scale Simultaneous Analysis Involving Material Instability Induced by Microstructural Bifurcation  Saiki, I.* , Ooue, K., Terada, K., Nakajima, A.	
03:12	A Phase-Field Theory of Dislocations: Statistical Modeling of Plasticity and Networks in Grain Boundaries  Koslowski, M.* , Cuitino, A., Ortiz, M.	Experimental Upper Bounds for Star Quality as a Function of Polytope Quality  Cunha, A.* , Ghattas, O.	Computational Multiscale Material Optimization of Two Phase Polycrystalline Materials  Lillbacka, R.* , Ekh, M., Runesson, K., Johnson, E.	
03:36	Dislocation Interaction with Surface and Interface in Semiconductor Thin Film Systems  Sun, L.* , Tan, E.		Adaptive Mesh Procedure For Computing Very Thin Shells  De Souza, C.*	

**WEDNESDAY, JULY 30: 2:00 – 4:00 PM**

Time 24 Min. Talks	Room: Galisteo <b>4<sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part II</b> <b>Session IV Parallel Mesh Generation</b> Session Chairs: Tautges, T., Burns, S.	Room: Ballroom A <b>Symposium on Meshfree Methods: Part I</b> <b>Session VIII Fracture/Discontinuities</b> Session Chairs: Wu, C., Sansour, C.	Room: Ballroom B <b>Symposium on Meshfree Methods: Part II</b> <b>Session III Applications of Meshfree Methods II</b> Session Chairs: Sukumar, N., Yoo, J.	
	Automatic Domain Decomposition for Parallel 2D Constrained Delaunay Mesh Generation  Chernikov, A.* , Chrisochoides, N.	An Extended Boundary Node Method For Modeling Discontinuities  Telukunta, S., Mukherjee, S.*	Point Collocation Meshfree Method Based on Derivatives Approximation for Elasticity  Lee, S.* , Kim, H., Kim, D., Kim, Y.	
02:00	Analysis of Parallel Surface Mesh Smoothing Methods  Feng, Q.* , Wu, Z., Weaver, J., Paulsen, K.	The Development of the MPM for Simulating the Evolution of Failure Involving Multi-Degrees of Discontinuity  Chen, Z.* , Hu, W., Shen, L.	A Multi-Scale Meshfree Approach for Predicting Wrinkling and its Experimental Verification  Cao, J.* , Liu, W., Lu, H., Cheng, H.	
02:24	Design of a Projection-Based Parallel Delaunay Mesh Generation and Refinement Algorithm  Kadow, C.* , Walkington, N.	Modeling of Discontinuous Derivatives in Meshfree Methods Revisited  Noguchi, H.* , Sato, Y.	Analysis of Elasto-Plastic Deformation Using Multi-Scale Meshfree Method  Yeon, J.* , Youn, S.	
02:48	Parallel Unstructured Volume Meshing in CFX-5  Braaten, M.* , Marchant, M.	An Enriched Meshless Method for Nonlinear Fracture Mechanics  Rao, B.* , Rahman, S.	Coupled Finite Element and Mesh-free Simulation of Crashworthiness and Manufacturing Problems  Wang, H.* , Botkin, M., Wu, C., Guo, Y.	
03:12	Robust Parallel Algorithm for Anisotropic Adaptive Tetrahedral Meshes  Lipnikov, K.* , Vassilevski, Y.	Performance of Finite Cover Method for Physically and Geometrically Nonlinear Problems  Terada, K.* , Asai, M., Ishibashi, Y., Kurumatani, M.		
03:36				

# Albuquerque Convention Center Map



WEDNESDAY, JULY 30: 4:30 – 6:30 PM		
Room	Location	Technical Session Title
Acoma	W. 1 <sup>st</sup> Floor	Numerical Methods for Advection Dominated Transport IV
Apache	W. 1 <sup>st</sup> Floor	Computational Hydrodynamics and Free-Surface Flows III
Cochiti	W. 1 <sup>st</sup> Floor	Computational Fluid Mechanics for Free and Moving Boundaries VI
Isleta	W. 1 <sup>st</sup> Floor	
Jemez	W. 1 <sup>st</sup> Floor	
Laguna	W. 1 <sup>st</sup> Floor	Computational Dynamics of Complex Fluids: Polymers, Glasses, Suspensions and Emulsions V: Polymer II
Nambe'	W. 1 <sup>st</sup> Floor	
Navajo	W. 1 <sup>st</sup> Floor	Computational Bioengineering V
Picuris	W. 1 <sup>st</sup> Floor	
Sandia	W. 1 <sup>st</sup> Floor	High Performance, Custom and CAS-Developed Finite Elements IV
Santa Ana	W. 1 <sup>st</sup> Floor	Stabilized and Multiscale Finite Element Methods IV
Santo Domingo	W. 1 <sup>st</sup> Floor	Advances in A Posteriori Error Estimation IV
Taos	W. 1 <sup>st</sup> Floor	
Tesuque	W. 1 <sup>st</sup> Floor	Supporting Infrastructures for Computational Mechanics Applications IV
Zuni	W. 1 <sup>st</sup> Floor	Uncertainty Quantification V: Non-Traditional Approaches to Uncertainty Quantification
La Cienega	E. Upper level	Symposium on Large-Scale Structural Dynamics Computation III
Mesilla	E. Upper level	Computational Geomechanics VII
Pecos	E. Upper level	Fundamentals and Applications of Cohesive Models VI
Ruidoso	E. Upper level	Material Forces in Computational Defect Mechanics III
San Miguel	E. Upper level	
Tijeras	E. Upper level	Dislocation Mechanics IV
Aztec	E. Lower Level	4 <sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part I: IX: Hybrid Meshing
Cimarron	E. Lower Level	Recent Developments in Multiscale Modeling VI
Dona Ana	E. Lower Level	
Galisteo	E. Lower Level	
Ballroom A	W. 3 <sup>rd</sup> Floor	Symposium on Meshfree Methods: Part I: IX: Properties of Meshfree Methods
Ballroom B	W. 3 <sup>rd</sup> Floor	Symposium on Meshfree Methods: Part II: IV: Applications of Meshfree Methods III

WEDNESDAY, JULY 30: 4:30 – 6:30 PM				
Time 24 Min. Talks	Room: Acoma <b>Numerical Methods for Advection Dominated Transport</b> <b>Session IV</b> Session Chair: Garritsen, M.	Room: Apache <b>Computational Hydrodynamics and Free-Surface Flows</b> <b>Session III</b> Session Chairs: Behr, M., Alibadi, S.	Room: Cochiti <b>Computational Fluid Mechanics for Free and Moving Boundaries</b> <b>Session VI</b> Session Chairs: Baer, T., Schunk, P.	Room: Isleta <b>No Session in this Room</b>
04:30	On the power of Balance-Characteristic Finite-Difference approach for Convection-Diffusion Problems  Kobrinski, I., Karabasov, S.*, Goloviznin, V.	KEYNOTE:  Unstructured RANS Simulations for Open-Channel Flow  Burg, C.* , Murali, V.	Modelizations of Moving Object in a Fluid Flow using Level Set  Hu, P.* , Chevaugeon, N., Flaherty, J., Shephard, M.	
04:54	A Multi-Methods Assessment for the Advection-Diffusion Equation  Voth, T.* , Christon, M., Martinez, M.		A Semi-Lagrangian Approach to Moving Interfaces  Strain, J.*	
05:18	Comparison of Galerkin and Control-Volume Finite Element Schemes for Advection-Diffusion Problems  Martinez, M.*	A Partitioned Implicit Approach to Treat Free Surfaces in Strongly Coupled Fluid Structure Interaction Simulations  Wall, W.* , Genkinger, S., Ramm, E.	A Phasefield Approach to Modeling Fluid-Fluid Interfaces in an Eulerian Framework  Hill, J.* , Walkington, N., Ghattas, O.	
05:42	A Method for Indirect Determination of the Diffusivities by Solving an Inverse Problem for Advection/Diffusion Equations  Nagornov, O., Sokolov, E., Tchijov, V.*	A Scalable Unstructured Finite Volume Code for the 3 Dimensional Shallow Water Equations  Ham, D.* , Pietrzak, J., Stelling, G.	Numerical Approaches for Modeling the Swelling Behavior of Hydrogels  Ji, H.* , Dolbow, J., Fried, E.	
06:06				

WEDNESDAY, JULY 30: 4:30 – 6:30 PM				
Time 24 Min. Talks	Room: Jemez <b>No Session in this Room</b>	Room: Laguna <b>Computational Dynamics of Complex Fluids: Polymers, Glasses, Suspensions and Emulsions</b> <b>Session V Polymer II</b> Session Chair: Grillet, A., Finlayson, B.	Room: Nambe'’ <b>No Session in this Room</b>	Room: Navajo <b>Computational Bioengineering</b> <b>Session V</b> Session Chairs: Kaazempur-Mofrad, M., Bordas, S.
04:30		A Spectral Vanishing Viscosity Method for Stabilizing Viscoelastic Flows  Symeonidis, V.*, Ma, X., Karniadakis, G.		KEYNOTE:  FE Implementation of Fung Elastic Model for Planar Anisotropic Biological Materials
04:54		High Order, Reliable Computations of Flow Structure in Nematic Polymers  Zhou, R.*, Forest, M., Wang, Q.		Sun, W., Scott, M., Sacks, M.*
05:18		A Non-linear Galerkin Method for the Study of Fokker-Planck Equations  Crescitelli, S., Grosso, M.* , Maffettone, P., Russo, L.		Computational Modeling of Abdominal Aortic Aneurysms to Predict Rupture Risk  Marra, S.* , Kennedy, F., Fillinger, M.
05:42		Atomic Level Stress Production in Polymeric Systems  Picu, R.* , Pavel, M.		Shape Optimization of Structures Using Reaction-Diffusion System and Finite Element Method  Yoshida, T.* , Tezuka, K., Kikuchi, M., Takahashi, A.
06:06				Stability Analysis of Multiplication of Plankton Using Parameter Identification  Yamauchi, T.* , Kawahara, M.

WEDNESDAY, JULY 30: 4:30 – 6:30 PM				
Time 24 Min. Talks	Room: Picuris <b>No Session in this Room</b>	Room: Sandia <b>High Performance, Custom and CAS-Developed Finite Elements</b> <b>Session IV</b> Session Chairs: Papadrakakis, M., Sze, K.	Room: Santa Ana <b>Stabilized and Multiscale Finite Element Methods</b> <b>Session IV</b> Session Chairs: Wall, W., Masud, A.	Room: Santo Domingo <b>Advances in A Posteriori Error Estimation</b> <b>Session IV</b> Session Chairs: Stewart, J., Peraire, J.
04:30		A Mathematica-Supported Study of Optimal Membrane Triangles with Drilling Freedoms  Felippa, C.*	Comparison Between a New Iterative Method (LCD) and Other KRYLOV-Space Methods for the SUPG Solution of Compressible Flows  Catabriga, L., Coutinho, A.* , Franca, L.	Adaptive Submodeling  Larson, M.*
04:54		A Symbolic Computational Framework Architecture for Automating Constitutive Modeling Encapsulation  Michopoulos, J.* , Lesoinne, M., Lechenault, F., Tsompanopoulou, P., Houstis, E., Farhat, C.	On the Interaction Between Dynamic Model Dissipation and Numerical Dissipation Due to SUPG Stabilization  Tejada-Martinez, A.* , Jansen, K.	Model Errors in Computational Meso-Macro-Scale Constitutive Modeling  Larsson, F.* , Runesson, K.
05:18		Automatic Derivation of Complex Material Models  Korelc, J.*	Design of Stabilization Methods for Plate Elements on the Basis of Modal Decomposition  Bischoff, M.* , Bletzinger, K.	A Posteriori Error Estimation for Problems in Dimensional Reduction  Vemaganti, K., Billade, N.*
05:42		The Post-Processed Galerkin Method in Structural Dynamics. Improving Results of Low-Dimensional Elements at Almost No Cost  Sansour, C.* , Wriggers, P.	A Stabilized Finite Element Method for Magnetohydrodynamics Equations  Nesliturk, A.*	How to Evaluate a Model by Computing its Entropy  Almeida, A., Faria, L.*
06:06			Multiscale Numerical Modeling of Three-Phase Flow in Porous Media  Juanes, R.*	

WEDNESDAY, JULY 30: 4:30 – 6:30 PM				
Time 24 Min. Talks	Room: Taos <b>No Session in this Room</b>	Room: Tesuque <b>Supporting Infrastructures for Computational Mechanics Applications</b> <b>Session IV</b> Session Chairs: Edwards, H., Wittum, G.	Room: Zuni <b>Uncertainty Quantification</b> <b>Session V</b> <b>Non-Traditional Approaches to Uncertainty Quantification</b> Session Chair: Johnson, E.	Room: La Cienega <b>Symposium on Large-Scale Structural Dynamics Computation</b> <b>Session III</b> Session Chairs: Bennighof, J., Lehoucq, R.
04:30		The Vista Framework for Generalized Mesh Computations Keasler, J.*	Competing Failure Risk Analysis Using Dempster-Shafer Theory Oberkampf, W. *, Helton, J., Johnson, J.	Advances in High-Performance Domain Decomposition Methods for Structural Dynamics Fragakis, Y. *, Papadrakakis, M.
04:54		The Common Mesh Interface: A Study in Computational Geometric Abstraction Johnson, J. *	A Probabilistic Approach to Uncertainty Quantification with Limited Information Red-Horse, J. *, Benjamin, A.	A Preconditioner for Substructuring Based on Constrained Energy Minimization Dohrmann, C. *, Mandel, J.
05:18		A Grid Computing Architecture for Applications in Computational Mechanics Lin, X., Williams, J.*	Distribution-Free Uncertainty Quantification Wojtkiewicz, S.*	Adaptive Computation of Large Scale Eigenvalue Problems with Preconditioned Eigensolution Strategies Feng, Y. *, Lehoucq, R.
05:42			Information-Gap Analysis in Support of Predictive Accuracy Assessment Hemez, F. *, Doebling, S.	Algorithms for Quadratic Eigenvalue Problems Day, D. *, Walsh, T.
06:06				Computation of Many Modes of Large Structural Systems Using Salinas Bhardwaj, M. *, Reese, G., Day, D., Pierson, K., Fulcher, C.

**WEDNESDAY, JULY 30: 4:30 – 6:30 PM**

Time 24 Min. Talks	Room: Mesilla <b>Computational Geomechanics</b> <b>Session VII</b>  Session Chairs: Rojek, J., Johnson, S.	Room: Pecos <b>Fundamentals and Applications of Cohesive Models</b> <b>Session VI</b>  Session Chair: Costanzo, F., Paulino, G.	Room: Ruidoso <b>Material Forces in Computational Defect Mechanics</b> <b>Session III</b>  Session Chairs: Govindjee, S., Kuhl, E.	Room: San Miguel <b>No Session in this Room</b>
04:30	Particle Based Formulation for Analysis of Wear in Rock Cutting Tools  Rojek, J.* , Miquel, J., Zarate, F., Oñate, E.	New Crack-Tip Elements for XFEM and Applications to Cohesive Cracks  Zi, G.* , Belytschko, T.	KEYNOTE:  Relaxed Potentials and Evolution Equations for Material Defects  Hackl, K.*	
04:54	A Pseudo-Boundary Method and its Application to Interacting Circular Inhomogeneities in a Multiply Connected Polygonal Domain  Wang, J.* , Mogilevskaya, S., Crouch, S.	Biaxial Tensile Strength of Brittle Solids  Zhou, F.* ; Molinari, J.		
05:18	Application of an Ellipsoidal Approximation to Discrete Element Modeling  Johnson, S.* , Williams, J., Cook, B.	Crack spacing in strained coatings on cohesive substrates  Guzina, B.* , Voller, V.	Computational Material Forces in Single-Slip Crystal-Plasticity  Menzel, A.* , Denzer, R., Steinmann, P.	
05:42		A Nonlocal Softening Plasticity Model for Concrete  Feist, C.* , Hofstetter, G.	Application of Discrete Material Forces Induced by the Finite Element Method  Mueller, R.* , Gross, D.	
06:06		An Anisotropic Material Model for Chipboard  Muller, S.* , Staubach, R., Stumvoll, M., Meschke, G.	The Void Size Effect on the Void Growth Rate in Ductile Materials  Liu, B., Qiu, X., Huang, Y., Hwang, K.* , Li, M., Liu, C.	

**WEDNESDAY, JULY 30: 4:30 – 6:30 PM**

Time 24 Min. Talks	Room: Tijeras <b>Dislocation Mechanics</b> <b>Session IV</b>  Session Chair: Acharya, A.	Room: Aztec <b>4<sup>th</sup> Symposium on Trends in Unstructured Mesh Generation: Part I</b>  <b>Session IX</b> <b>Hybrid Meshing</b>  Session Chairs: Hitschfeld, N., Shepard, M.	Room: Cimarron <b>Recent Developments in Multiscale Modeling</b>  <b>Session VI</b>  Session Chairs: Agusto De Souza, C., Fish, J.	Room: Dona Ana  <b>No Session in this Room</b>
04:30	Atomistic Simulation of Dislocation Activities in Thin Metal Films  Shen, Y.*, Ege, E.	Generation of Mixed Element Meshes Using a Flexible Refinement Approach: Advantages and Limitations  Hitschfeld, N.*	Non-local Multiscale Analysis Method for Discontinuous Deformation of Brittle Materials  Asai, M.*, Terada, K.	
04:54	Combined Field Dislocation Mechanics and Phenomenological Plasticity  Roy, A.*, Acharya, A.	Hybrid Mesh Generation Based on Metric Identity in Discrete Form  Niederdrenk, P.*, Gerhold, T.	Multi-Scale Modeling and Analysis for Design of Advanced Steels  Hao, S.*, Olson, G.	
05:18	3D Dislocation Dynamics Simulation of Dislocation and Precipitate Interaction: Case of Spherical and Cubical, Shearable and Non-Penetrable Particles  Shin, C.*, Fivel, M., Verdier, M., Oh, K.	Three Dimensional Hybrid Mesh Generation using a Combined Cartesian and Tetrahedral Mesh Generator  Lee, Y.*, Blacker, T., Zhu, J.	Nucleation of Chain Entanglements and Network Structure in Amorphous Polymer Under Tension: A Molecular Dynamics Study  Yashiro, K.*, Ito, T., Tomita, Y.	
05:42	Dislocation Dynamics Simulation of Precipitation Hardening  Takahashi, A.*, Soneda, N., Yagawa, G.	Optimal Semi-Structured Grid Generation in Ridges and Gaps  Athansiadis, A.*, Deconinck, H.	Numerical Simulation of Size Dependent Micromechanical Behavior of Rubber-Blended Polymer  Lu, W.*, Tomita, Y.	
06:06	Molecular Dynamics Simulation of Pinning of Dislocations by Inhomogeneous Precipitates in Iron  Kohler, C., Kizler, P.*, Schmauder, S.			

**WEDNESDAY, JULY 30: 4:30 – 6:30 PM**

Time 24 Min. Talks	Room: Galisteo <b>No Session in this Room</b>	Room: Ballroom A <b>Symposium on Meshfree Methods: Part I</b>  <b>Session IX</b> <b>Properties of Meshfree Methods</b>  Session Chairs: Noguchi, H., Tsukanov, I.	Room: Ballroom B <b>Symposium on Meshfree Methods: Part II</b>  <b>Session IV</b> <b>Applications of Meshfree Methods III</b>  Session Chairs: Chen, J., Lu, H.	
04:30		Free and Forced Vibrations of Thick Elastic Plates by Meshless Local-Petrov Galerkin Method  Batra, R.* , Qian, L., Chen L.	Adaptive Analysis of Seepage Flow Using Multilevel Finite Cover Method  Suzuki, K.* , Kaminaga, A., Fujii, D., Ohtsubo, H., Shigeno, Y.	
04:54		The Influence of Support Size in Reproducing Kernel Element Method  Lu, H.* , Liu, W., Han, W., Li, S., Cao, J.	Riemann Solver in Smoothed Particles Hydrodynamics  Molteni, D.* , Bilello, C.	
05:18		On the Shape Parameters of MQ Radial Basis Function Used in the Heaviside Weighted Meshless Method for Two-Dimensional Solids  Xiao, J.* , Gama, B., Gillespie, J.	A Local Spectral Method for Strucrural Analysis  Wei, G.* , Zhao, Y., Xiang, Y.	
05:42		Basic Study of Weighting Function for Element Free Galerkin Method  Ishizawa, D.*	Shape Optimization and Optimal Control of Geometrically Exact Structures Using Hermitian Diffuse Approximation  Ibrahimbegovic, A.* , Knopf-Lenoir, C., Villon, P.*	
06:06		Three Dimensional Thermal Stress Analysis by Using Element-free Galerkin Method  Tsunori, M.* , Otake, Y., Hagihara, S., Miyazaki, N.		

## INDEX

### A

- Abdo, J..... 43  
 Abedi, J..... 21, 70, 81  
 Abedi, R..... 42, 65, 81  
 Abraham, F..... 37  
 Abras, J..... 84  
 Acharya, A..... 26, 95  
 Achenbach, J..... 70  
 Acrivos, A..... 21  
 Adams, B..... 56  
 Adams, M..... 32  
 Adjerid, A..... 32  
 Adjerid, S..... 32, 62, 83  
 Adley, M..... 61  
 Agelastos, A..... 54  
 Agusto De Souza, C..... 95  
 Ahuja, S..... 72  
 Aidun, J..... 36  
 Aizawa, T..... 65  
 Aizinger, V..... 42, 53  
 Akay, A..... 54  
 Akcelik, V..... 25  
 Akers, S..... 61  
 Akiba, H..... 71  
 Akin, E..... 40  
 Akin, J.E..... 10  
 Akkaram, S..... 27  
 Albert, R..... 14, 25  
 Albrecht, H..... 84  
 Albuquerque, E..... 65  
 Al-Dojayli, M..... 33, 71  
 Aliabadi, S..... 21, 30, 31, 70, 81  
 Alibadi, S..... 70, 81, 90  
 Allen, G..... 73  
 Allen, Jr., J..... 74  
 Allen, M..... 14  
 Allix, O..... 43  
 Almeida, A..... 92  
 Aluru, N..... 10, 21  
 Alves Rochinha, F..... 62  
 Alves, J..... 24, 33, 34  
 Amaratunga, K..... 53  
 Anderson, R..... 11, 31

- Andia, P..... 15  
 Antoun, B..... 44  
 Argento, A..... 43  
 Arias, I..... 70  
 Armero, F..... 24, 64  
 Arroyo, M..... 16, 36  
 Arruda, E..... 12, 23, 74  
 Arsenlis, A..... 15, 86  
 Arwade, S..... 14  
 Asai, M..... 87, 95  
 Askes, H..... 56, 75, 76, 85  
 Aswathnarayana, S..... 13  
 Ata, R..... 70  
 Athanasiadis, A..... 95  
 Attia, M..... 24  
 Aubry, D..... 42  
 Aubry, S..... 35, 45  
 Auer, M..... 31  
 Avdeev, I..... 42  
 Averill, R..... 64  
 Avery, P..... 13
- B**
- Baar, K..... 23  
 Babuska, I..... 13, 46, 54, 83, 86  
 Badalassi, V..... 51  
 Baer, T..... 40, 51, 60, 70, 81, 90  
 Baffour, R..... 21  
 Baggag, A..... 21  
 Bainbridge, B..... 63  
 Bammann, D..... 44, 45  
 Bammmann, D..... 35  
 Bandar, A..... 45  
 Bandeira, A..... 43  
 Banerjee, S..... 51  
 Banerjee, U..... 46  
 Bangerth, W..... 84  
 Bankoff, S..... 51  
 Barbone, P..... 13, 24, 33, 43, 54, 72, 73  
 Barcelos, M..... 61  
 Barnett, D..... 65  
 Barsoum, R..... 35  
 Bartel, T..... 51  
 Barth, T..... 72

- Barth, W..... 11  
 Bartlett, R..... 27  
 Barton, N..... 22  
 Basaran, O..... 81  
 Baskes, M..... 36  
 Bassani, J..... 26, 86  
 Bastian, P..... 63  
 Basu, U..... 51  
 Batra, R..... 14, 22, 31, 61, 71, 96  
 Battaile, C..... 45  
 Battista, R..... 23  
 Bauchau, O..... 12, 73  
 Bauer, A..... 32, 55, 84  
 Bayraktar, H..... 32  
 Bazilevs, Y..... 21  
 Beall, M..... 15, 46  
 Beaudoin, A..... 26, 44  
 Becene, A..... 31, 51  
 Becirovic, A..... 42  
 Becker, E..... 71  
 Becker, R..... 15  
 Beckner, V..... 21  
 Beeson, D..... 27  
 Behr, M..... 81, 90  
 Bekkers, E..... 76  
 Belak, J..... 45  
 Beley, J..... 27  
 Bell, J..... 21  
 Bell, R..... 23  
 Bellezza, A..... 71  
 Bellur-Ramaswamy, R..... 11  
 Belytschko T..... 31  
 Belytschko, T.11, 16, 33, 35, 40, 46, 55, 61, 64, 66, 74, 85, 94  
 Benard, A..... 40, 44  
 Bendsoe, M..... 44, 74  
 Bendsøe, M..... 55  
 Benjamin, A..... 93  
 Benney, R..... 30  
 Bennighof, J..... 73, 84, 93  
 Benson, D..... 11, 22, 41  
 Benzerga, A..... 15, 26  
 Benzley, S..... 35, 56  
 Berger, E..... 63

Berggren, M.	27	Boyce, D.	45	Canales, J.	83
Bergman, L.	54, 73, 84	Braaten, M.	87	Cao, J.	87, 96
Beris, A.	82	Brady, J.	52	Carey, G.	11, 30, 82
Berndt, M.	26	Braikat, B.	26	Cargile, J.	61
Bessette, G.	23	Brand, R.	32	Carnes, B.	10
Bewley, T.	27	Brannon, R.	71	Carpenter, M.	81
Beyerlein, I.	36, 74	Bréchet, Y.	26	Carrasco, C.	52
Bhalla, K.	63	Breitenfeld, M.	23	Carroll, D.	11
Bhardwaj, M.	93	Breitkopf, P.	57	Carter, E.	44, 65
Bianchi, G.	25	Brewer, M.	45	Cartraud, P.	86
Bickel, T.	7, 77	Brezina, M.	36	Casteleiro, M.	36
Bielak, J.	60	Brezzi, F.	62	Castillo, V.	42
Bilello, C.	96	Brill, S.	70	Castro, J.	34
Billade, N.	92	Bringa, E.	15	Catabriga, L.	21, 92
Binkele, P.	36	Brown, D.	63	Causin, P.	32
Biros, G.	25	Brown, III, H.	82	Cavalcante-Neto, J.	76
Bischoff, M.	41, 62, 92	Brown, K.	24, 61	Celentano, D.	40, 75
Bishop, J.	22	Bruhns, O.	64	Ceniceros, H.	51
Bitsie, F.	63	Bruns, T.	11	Chambolle, A.	55
Bittencourt, E.	26	Brydon, A.	16	Chamoin, L.	62
Bittencourt, M.	53	Buchanan, G.	60	Chan, A.	64
Blacker, T.	15, 95	Budyn, E.	55	Chand, K.	45, 63
Blazek, J.	12, 23	Buehler, M.	35	Chandran, K.	82
Bletzinger, K.	62, 92	Bulatov, V.	15, 65, 75	Chang, K.	55
Bobaru, F.	34	Bungartz, H.	22, 31	Chang, Y.	55, 57
Bobba, K.	60	Burg, C.	90	Chao, H.	44
Bochev, P.	72	Burgoyne, C.	71	Chappuis, C.	57
Bodin, A.	76	Burgueno, J.	64	Charmpis, D.	25
Boitnott, R.	54	Burns, S.	46, 57, 76, 87	Chen L.	96
Bonnet, M.	54	Burton, T.	84	Chen Z.	26
Booth, J.	62	Bussmann, M.	51	Chen, A.	81
Bordas, S.	52, 91	Buttaccio, C.	31	Chen, B.	35, 44
Borden, M.	35	<b>C</b>		Chen, C.	72, 83
Borgersen, S.	31	Cacho, F.	41	Chen, E.	44
Borggaard, J.	27	Cadou, J.	26	Chen, H.	33
Borja, R.	44, 74	Cagin, T.	15	Chen, J.	13, 16, 26, 27, 66, 74, 75, 96
Borouchaki, H.	57	Cai, W.	75	Chen, K.	81
Borrelli, P.	21	Cai, X.	36, 60, 65	Chen, L.	14
Bota, K.	21	Cai, Z.	22	Chen, P.	51
Botkin, M.	76, 87	Calve, S.	12, 23	Chen, X.	51
Bottasso, C.	12, 26, 41, 73, 83	Calvetti, D.	54	Chen, Z.	35, 71, 76, 87
Bourdin, B.	55	Calvo, N.	27, 40, 41	Cheng, C.	24
Boutt, D.	85	Campbell, M.	73	Cheng, H.	87
Bouville, M.	56	Campello, E.	26	Cheng, P.	12
Bower, A.	44			Chernikov, A.	87

Chessa, J.	11, 31, 40
Chevaugeon, N.	12, 62, 90
Chi, W.	27
Chidiac, S.	46
Chiou, J.	54
Cho, J.	14
Cho, S.	85
Choi, J.	64
Choi, K.	14, 55, 64
Choi, Y.	35, 76
Chong, K.	35
Chopp, D.	52
Chopra, A.	51
Chow, C.	43
Chow, S.	11
Chowdhury, M.	33
Chrisochoides, N.	87
Christon, M.	7, 41, 90
Chung, H.	66
Chung, M.	60
Chung, S.	65
Cipolla, J.	32
Cirak, F.	11
Cisilino, A.	71
Citelli, M.	54
Claves, S.	45
Cler, D.	62
Cloirec, M.	86
Cockburn, B.	12, 23, 32, 42
Cocle, R.	41
Codina, R.	31, 72, 83
Coelho, L.	76
Coleman, J.	71
Collis, S.	10
Colominas, I.	36
Colonius, T.	32
Comi, C.	55
Constantinescu, A.	43
Conti, S.	71
Cook, B.	85, 94
Cortez, R.	22
Costanzo, F.	15, 85, 94
Couchman, L.	16, 61
Coutinho, A.	21, 23, 34, 72, 92
Crandall, J.	63
Crawford Downs, J.	71
Creci, G.	65
Crescitelli, S.	91
Criscione, J.	12, 31
Crisfield, M.	33
Crouch, S.	44, 94
Cruchaga, M.	40
Cueto-Felgueroso, L.	36
Cui, Z.	82
Cuitino, A.	15, 45, 56, 86
Cunha, A.	86
Curtin, W.	44
Czekanski, A.	33, 65, 71
<b>D</b>	
D'Addetta, G.	62
Daeninck, G.	41
Dai, B.	10
Damil, N.	26
Danielson, K.	52, 61, 71
Dargush, G.	22, 53, 60
Datta, D.	56, 61
Dawson, C.	23, 32, 53
Dawson, P.	35, 45, 56
Day, D.	93
Day, M.	21
de Boer, M.	25
de Borst, R.	14, 52
de Graeve, D.	56
de Mattos Pimenta, P.	43
De Sampaio, P.	23
De Souza, C.	86
de Sturler, E.	73
De, S.	52, 57, 61, 76
Dean, E.	70
Deb, A.	33
Debußchere, B.	10, 30
Deconinck, H.	95
Deister, F.	15
Del Pin, F.	27, 40, 53
Delaplace, A.	72
Demkowicz, L.	12, 23, 42, 47
Demmie, P.	34
Dempsey, F.	63
Denda, M.	75
Dendy, E.	40, 51
Deng, B.	13, 43, 63
Dennis, R.	23
Denzer, R.	85, 94
Deraemaeker, A.	43
Derby, J.	10, 11, 30
Dere, Y.	73
Deshmukh, D.	63
Deshmukh, P.	34
Detomi, D.	26, 41, 83
Dettmer, W.	24, 41
Devloo, P.	12, 42
Dey, S.	61
D'Heedene, S.	53
Diaz de la Rubia, T.	65
Diaz, A.	40, 44, 85
Díez, P.	62
Dillon, R.	11, 22
Dilts, G.	27, 66
Dimiduk, D.	35
Diwekar, U.	14
Djellouli, R.	51
Dodds Jr., R.	25
Dodds, Jr., R.	74
Doebling, S.	63, 93
Dohnal, T.	62
Dohner, J.	82
Dohrmann, C.	93
Dolbow, J.	13, 66, 76, 85, 90
Dong, J.	64
Dong, S.	16
Doshi, P.	81
Dowding, K.	63
Doyle, J.	60
Drake, R.	73
Drazer, G.	21
Dumitrica, T.	16
Dunn, P.	82
Dunn, S.	64
Dureisseix, D.	65
Dutta, P.	21, 30
Dutton, T.	41
Dyadechko, V.	45

**E**

- Earp, M. .... 35  
Ebecken, N. .... 34  
Edwards, A. .... 15  
Edwards, H. .... 63, 73, 84, 93  
Ege, E. .... 95  
Ehrlich, D. .... 64  
Ekh, M. .... 86  
El Azab, A. .... 65  
El Shamy, U. .... 55  
El-Azab, A. .... 65, 75  
Elbestawi, M. .... 65  
Eldred, M. .... 14, 73  
Elliott, N. .... 11  
ElSheikh, A. .... 46  
Endres, L. .... 75  
Engelmann, B. .... 33  
Erickson, J. .... 56, 65  
Ern, A. .... 53  
Espino, L. .... 52  
Espinosa, H. .... 34  
Estep, D. .... 83  
Etse, G. .... 64  
Evans, G. .... 81  
Evans, W. .... 75, 86  
Evgrafov, A. .... 74  
Ewert, E. .... 15  
Ewing, R. .... 70, 81  
Ewins, D. .... 84

**F**

- Fago, M. .... 65  
Falgout, R. .... 36  
Falk, M. .... 35, 56  
Falk, R. .... 42, 53  
Fan, Y. .... 65, 81  
Fang, H. .... 36, 57  
Farhat, C. .... 13, 31, 42, 60, 92  
Faria, L. .... 92  
Fasanella, E. .... 43, 54  
Fata, S. .... 33  
Fauci, L. .... 11, 22  
Faverjon, B. .... 13  
Feijoo, G. .... 13, 24, 33, 54

- Feinstein, J. .... 82  
Feissel, P. .... 43  
Feist, C. .... 94  
Fekete, J. .... 63  
Felippa, C. .... 41, 53, 62, 72, 83, 92  
Feng, J. .... 51  
Feng, Q. .... 87  
Feng, Y. .... 93  
Feng, Z. .... 40  
Ferencz, R. .... 12, 32, 42, 51, 60  
Ferent, A. .... 40  
Fernandes, P. .... 74  
Fernandez, A. .... 52  
Fernandez-Mendez, S. .... 66  
Ferreira, J. .... 65  
Fiedler, R. .... 23, 32  
Figueroa, A. .... 41  
Figueroa, V. .... 63  
Filippi, S. .... 54  
Fillinger, M. .... 91  
Finlayson, B. .... 52, 82, 91  
Fish, J. .... 7, 35, 45, 73, 75, 95  
Fivel, M. .... 95  
Flaherty, J. .... 12, 23, 32, 42, 62, 72, 90  
Fleitas, D. .... 65  
Fogelson, A. .... 11  
Folgado, J. .... 74  
Ford, K. .... 21  
Forest, M. .... 82, 91  
Fortner, N. .... 21  
Fossum, A. .... 55, 74  
Foster, C. .... 74  
Foulk, J. .... 44  
Fowler, J. .... 46  
Fox, D. .... 73  
Fragakis, Y. .... 93  
Franca, L. .... 62, 92  
Francois, M. .... 51  
Frauenfelder, P. .... 23  
Freitag-Diachin, L. .... 45, 86  
Freund, J. .... 30  
Frew, D. .... 54  
Freytag, M. .... 76  
Fried, E. .... 85, 90  
Frischknecht, A. .... 82

- Fu, H. .... 22  
Fujii, D. .... 96  
Fujikubo, M. .... 22  
Fujisawa, T. .... 21  
Fukuoka, T. .... 35  
Fulcher, C. .... 93  
Fuller, A. .... 21, 81
- G**
- Gailly, B. .... 34  
Gaisbauer, R. .... 42  
Gal, E. .... 62  
Galik, K. .... 71  
Gama, B. .... 96  
Gambarotta, L. .... 23, 32  
Ganapathysubramanian, S. .... 56  
Gao, H. .... 26, 35, 44, 74, 75, 85  
Gao, M. .... 35  
Garasi, C. .... 41  
Garcia, J. .... 70  
Garikipati, K. .... 12, 23, 56, 65, 74, 83  
Garinella, R. .... 26, 45  
Garland, M. .... 75  
Garmendia, I. .... 83  
Garmestani, H. .... 45, 56  
Garritsen, M. .... 90  
Gartling, D. .... 10, 11, 22, 30, 31, 41  
Garvin, J. .... 40  
Gasser, T. .... 32, 41  
Gaul, L. .... 43, 63, 84  
Gawin, D. .... 55  
Gee, M. .... 33, 51  
Geers, T. .... 82  
Genkinger, S. .... 90  
Georges, L. .... 21  
Gerhold, T. .... 95  
Gerritsen, M. .... 81  
Gerstenberger, A. .... 51, 66  
Gerstle, W. .... 12  
Geubelle P. .... 23  
Geubelle, P. .... 32, 34  
Geuzaine, P. .... 31  
Ghaboussi, J. .... 64  
Ghanem, R. .... 10, 13, 43, 54, 56, 65, 84  
Gharib, M. .... 60

Ghattas, O.	25, 60, 86, 90
Ghayour, K.	10
Ghoneim, N.	65, 86
Ghoniem, N.	15, 26, 65
Ghosal, S.	30
Ghosh, S.	44, 45, 75
Gillespie, J.	96
Giunta, A.	14, 25, 34, 73
Givoli, D.	51, 60
Glimm, J.	11, 41
Glowinski, R.	70
Goddard, W.	15
Godlewski, T.	43
Gogotsi, Y.	10
Gokhale, N.	54
Goldstein, D.	10
Goloviznin, V.	31, 90
Gonzales, M.	34
Gonzalez-Ronda, L.	43
Goodman, E.	64
Gosteev, K.	72
Govindjee, S.	30, 33, 74, 85, 94
Graham-Brady, L.	14
Grandhi, R.	64
Grätsch, T.	62
Gravemeier, V.	72
Gray, G.	15
Greenleaf, J.	43
Griebel, M.	36, 46
Grigoriev, M.	22, 53
Grillet, A.	82, 91
Grønbech-Jensen, N.	74
Grosh, K.	12, 23, 74
Gross, D.	94
Grosso, M.	91
Grosso, R.	56
Gu, L.	43, 44, 54, 63
Guddati, M.	24, 70, 81
Guedes, J.	74
Guilkey, J.	73
Gullickson, J.	44
Gunzburger, M.	72
Guo, Y.	76, 87
Guoy, D.	56
Gupta, P.	60
Gurtin, M.*	74
Gutierrez, M.	14
Guy, R.	11
Guzina, B.	33, 54, 74, 94
Gyimesi, M.	42
<b>H</b>	
Ha, Y.	85
Haas, L.	33, 71
Haber, R.	7, 12, 32, 42, 55, 62, 65, 81
Hackl, K.	15, 26, 94
Hadjesfandiari, A.	60
Hagihara, S.	57, 96
Hagstrom, T.	51, 62
Hakula, H.	32, 86
Hales, J.	12
Hallack, P.	23
Hallquist, J.	43
Ham, D.	90
Hamaekers, J.	46
Han, T.	56
Han, W.	46, 96
Han, X.	14, 24, 25, 65
Hanks, B.	15
Hansbo, P.	13
Hao, S.	46, 57, 95
Harari, I.	51, 60, 72, 83
Harbour, R.	33, 71
Hardy, R.	54
Harman, T.	73
Hart, R.	71
Hartov, A.	43
Haselbacher, A.	21, 23
Hashash, Y.	34, 64
Hasija, V.	45
Hassan, O.	15
Hasselman, T.	63
Hattiangadi, A.	44
Haufe, A.	43
Haugen, B.	72
Haughton, D.	26
Hauke, G.	53, 83
Havstad, M.	42
Hawker, M.	81
Hayes, R.	65
Hazel, A.	81
He, X.	14
Heath, A.	64
Heath, M.	31
Heber, G.	14, 44
Hector Jr., L.	44
Heidari, A.	24
Heil, M.	52, 81
Heinrich, J.	11, 40
Heinstein, M.	13, 24, 33, 43, 61
Heintz, P.	13
Helton, J.	93
Hemez, F.	63, 93
Henshaw, W.	63
Herrera, I.	60, 70
Herrmann, G.	74
Herskovic, V.	75
Hesthaven, J.	23, 62
Hetmaniuk, U.	84
Heuer, N.	53
Hidajat, R.	65
Higdon, J.	52
Hill, D.	30
Hill, J.	90
Hinkle, J.	54, 63, 73
Hinnerichs, T.	63
Hirt, C.W.	51
Hisada, T.	30
Hitschfeld, N.	75, 95
Hjelmstad, K.	12
Hobbs, M.	63
Hoffmann, R.	32
Hofstetter, G.	94
Hogan, R.	63
Hollister, S.	52, 61
Holm, D.	10, 21
Holm, E.	45
Holmes, B.	82
Holthe, K.	72
Holzapfel, G.	12, 23, 24, 31, 32, 41, 61
Hong, K.	25
Hoof, J.	33
Hoover, C.	23, 42
Hopkins, M.	22, 72
Hopkins, R.	63

Hoppe, U. .... 15  
Hori, M. .... 14, 34, 83  
Horstemeyer, M. .... 36  
Hosoyama, A. .... 85  
Hough, P. .... 34  
Housiadis, K. .... 82  
Houstis, E. .... 42, 92  
Houzeaux, G. .... 31  
Hovland, P. .... 27  
Hu, P. .... 90  
Hu, Q. .... 15  
Hu, W. .... 71, 87  
Hua, M. .... 16  
Huang, K. .... 16  
Huang, R. .... 66  
Huang, W. .... 76  
Huang, Y. .... 15, 16, 26, 35, 44, 75, 94  
Huang, Z. .... 66  
Huerta, A. .... 62, 66  
Hughes, D. .... 35  
Hughes, T. .... 10, 13, 21, 30, 41, 53, 62  
Huh, J. .... 34  
Hulbert G. .... 23  
Hulbert, G. .... 65, 77  
Hurt III, W. .... 14  
Hussein, M. .... 65  
Hwang, C. .... 32  
Hwang, F. .... 36  
Hwang, K. .... 16, 26, 44, 94  
Hyun, S. .... 57

## I

Ibrahimbegovic, A. .... 72, 96  
Ichimura, T. .... 34  
Idelsohn, S. .... 16, 27, 40, 41, 53, 70  
Idesman, A. .... 26  
Iesulauro, E. .... 14, 44  
Igusa, T. .... 73  
Iijima, T. .... 57  
Ikeda, T. .... 57  
Iliescu, T. .... 27  
Inaba, M. .... 57  
Ingber, M. .... 22, 41, 52  
Ingraffea, A. .... 14, 44, 64  
Ino, M. .... 71

Ishibashi, Y. .... 87  
Ishihara, D. .... 52  
Ishihara, Y. .... 57  
Ishizawa, D. .... 51, 96  
Ito, T. .... 95

## J

Jackson, K. .... 43, 54  
Jacob, K. .... 25  
Jannetti, C. .... 26  
Jansen, E. .... 15  
Jansen, K. .... 12, 21, 30, 41, 60, 82, 83, 92  
Jeffrey, B. .... 40  
Jegdic, K. .... 32  
Jensen, J. .... 44  
Jensen, R. .... 85  
Jensen, N. .... 44  
Jeremic, B. .... 64, 74  
Jerrard, R. .... 12, 32, 42  
Jessen, K. .... 81  
Ji, A. .... 21  
Ji, H. .... 85, 90  
Ji, L. .... 71  
Jiang, B. .... 60, 65  
Jiang, H. .... 16, 34, 75  
Jiang, L. .... 56  
Jiao, X. .... 12, 23, 31, 73  
Jie, B. .... 75  
Jie, M. .... 43  
Jin, C. .... 57  
Jin, Z. .... 74  
Johnson, A. .... 21, 31  
Johnson, E. .... 84, 86, 93  
Johnson, G. .... 52  
Johnson, H. .... 75  
Johnson, J. .... 93  
Johnson, S. .... 94  
Jones, R. .... 24, 61, 63  
Jones, W. .... 35  
Joseph, D. .... 45  
Juanes, R. .... 92

## K

Kaazempur-Mofrad, M. .... 82, 91  
Kadow, C. .... 87

Kadowaki, H. .... 26  
Kale, L. .... 62, 73  
Kallivokas, L. .... 51, 70, 81  
Kambhamettu, C. .... 57  
Kaminaga, A. .... 96  
Kamm, R. .... 82  
Kanapady, R. .... 23, 42  
Kanayama, H. .... 31, 36  
Kantura, J. .... 63  
Karabasov, S. .... 90  
Karam, J. .... 41  
Karanam, A. .... 12  
Karapitta, L. .... 72  
Karniadakis, G. .... 12, 21, 91  
Karpov, E. .... 27, 57  
Kashiyama, K. .... 30  
Kawaguchi, A. .... 22  
Kawahara, M. .... 40, 70, 81, 91  
Kawai, H. .... 25  
Keasler, J. .... 93  
Keaveny, T. .... 32  
Kennedy, F. .... 43, 91  
Kerrigan, J. .... 63  
Kerstein, A. .... 30  
Keyes, D. .... 36, 47  
Khusid, B. .... 21  
Kiddy, K. .... 32  
Kienzler, R. .... 74  
Kikuchi, M. .... 35, 91  
Kikuchi, N. .... 44, 83  
Kim, C. .... 84  
Kim, D. .... 27, 36, 87  
Kim, E. .... 60  
Kim, H. .... 87  
Kim, J. .... 34, 55, 64, 84  
Kim, M. .... 16, 84  
Kim, N. .... 55  
Kim, Y. .... 14, 27, 36, 62, 74, 85, 87  
King, A. .... 13  
Kirby, M. .... 12  
Kirby, R. .... 23  
Kirk, B. .... 41  
Kirkinis, E. .... 26  
Kisilev, V. .... 31  
Kiziltas, G. .... 44

Kizler, P.	36, 95	Kwok, W.	26	Levy, D.	42
Klauser, A.	32	Kwon, K.	76	Levy, R.	62
Klein, P.	25, 44, 74, 85	Kwon, Y.	10	Lew, A.	23, 31, 52
Kliman, H.	11	Kyuba, H.	14	Li, F.	12
Knapen, T.	73	<b>L</b>		Li, M.	26, 44, 94
Knio, O.	10, 84	Ladeveze, P.	43, 45, 65	Li, Q.	63
Knopf-Lenoir, C.	96	Ladevèze, P.	81	Li, S.	16, 36, 46, 75, 96
Knupp, P.	45, 86	Lagaros, N.	25	Li, X.	11, 15, 82
Ko, K.	75	Lage, C.	23	Li, Y.	40
Kobayashi, J.	81	Lahey, R.	60	Li, Z.	75
Kobayashi, T.	41	Lakes, R.	32	Liang, J.	66
Kobrinski, I.	90	Lampe, M.	84	Liang, W.	36, 65
Kocak, S.	56, 65	Landaberea, A.	83	Liao, G.	65
Kodani, T.	76	Lang, S.	63	Liao, J.	64
Kohler, C.	95	Lankalapalli, S.	72	Libersky, L.	57, 76
Komzsik, L.	84	Lapenta, G.	72	Liebe, T.	85
Koplik, J.	21	Larson, M.	92	Lielens, G.	73
Korelc, J.	92	Larsson, F.	92	Liew, K.	14
Korotkin, I.	31	Laschet, G.	33, 71	Lijewski, M.	21
Korzekwa, D.	32	Laug, P.	57	Lillbacka, R.	86
Koschnick, F.	62	Laursen, T.	13, 22, 33	Lim, K.	70
Koslowski, M.	86	Lawlor, O.	73	Lim, O.	25
Kothe, D.	40, 51, 60	Layton, W.	27	Lin, C.	52
Kotta, V.	26	Lazarov, R.	81	Lin, G.	12
Kouris, D.	46	Le Maître, O.	84	Lin, J.	33
Kowalczyk, P.	24	Le Maître, O.	10	Lin, P.	10
Krenn, C.	26, 56	Lear, M.	22, 71	Lin, X.	93
Krishnaswami, P.	76	Lecampion, B.	43	Lipnikov, K.	83, 87
Krivodonova, L.	12, 32, 72	Lechenault, F.	42, 92	Lipton, R.	25, 34, 64, 74
Krysl, P.	42, 75, 81, 84	Lecomte, C.	73	Lira, W.	76
Kucharik, M.	11	Lee, G.	66	Littlefield, D.	52, 82
Kuchnicki, S.	15	Lee, H.	25	Liu, B.	75, 94
Kuettler, C.	41	Lee, L.	11	Liu, C.	44, 94
Kuhl, E.	12, 23, 85, 94	Lee, S.	16, 34, 36, 51, 66, 87	Liu, D.	21, 54
Kuhne, C.	27	Lee, T.	66	Liu, G.	24, 25, 36
Kuhnert, J.	27	Lee, W.	66	Liu, W.	13, 24, 26, 27, 46, 51, 57, 66, 75, 87, 96
Kukta, R.	46	Lee, Y.	95	Liu, Y.	15, 57, 60, 83
Kulkarni, D.	34	Legay, A.	11, 61	Liu, Z.	61
Kumar, P.	14	Lehoucq, R.	22, 73, 84, 93	Logan, R.	64
Kume, H.	31	Lehtinen, J.	86	Lomov, I.	22
Kurumatani, M.	87	Leland, R.	15	Long, K.	84
Kuttler, C.	24	Lesburg, L.	43	Lovell, M.	42
Kvamsdal, T.	52, 61, 71, 82	Lesoinne, M.	13, 42, 92	Lu, H.	87, 96
Kwak, B.	34, 76	Levitas, V.	26	Lu, J.	12, 61
Kwak, J.	85			Lu, W.	54, 95

Lund, E.	64	Martha, L.	34, 76
Lunn, K.	43	Martin, M.	15
Luo, Y.	75	Martinez, M.	11, 31, 41, 90
Luscher, D.	63	Marulanda, C.	64
Luton, J.	32	Massa, L.	32
Lyle, K.	13	Massabo, R.	23
<b>M</b>		Massey, T.	32
Ma, J.	76	Masud, A.	53, 62, 92
Ma, X.	91	Matous, K.	45
Ma, Z.	23	Matou_, K.,	45
MacLachlan, S.	36	Matsui, K.	85
Macri, M.	57	Matsumoto, J.	56, 71, 81
Madeley, N.	63	Matsumoto, Y.	71
Madureira, A.	62	Matsunaga, Y.	57
Maduri, R.	70	Matta, A.	10
Maffeo, B.	27	Matthies, H.	24
Maffettone, P.	91	Maupin, R.	63
Magoules, F.	60	Maute, K.	14, 34, 61, 64
Mahadevan, S.	63, 73	Maxey, M.	21
Mahesh, K.	10, 30	Mayer, R.	24
Mahesh, S.	36	McCormick, S.	36
Maiti, S.	34	McDaniel, J.	73
Majorell, A.	56	McDermott, R.	30
Malik, I.	75	McDowell, D.	25, 65
Malik, M.	51	McFadden, S.	44
Mallison, B.	81	McGee, W.	22
Mammoli, A.	52	McKeown, R.	32
Mandel, J.	93	McLaughlin, J.	24, 71
Mang, H.	15	McPherson, B.	85
Maniatty, A.	45, 56	McPherson, D.	82
Manke, C.	82	McQueen, D.	11
Mann, T.	54	Medovikov, A.	22
Manoel dos Santos, A.	86	Meerbergen, K.	73
Manteuffel, T.	36	Megaridis, C.	10
Manzari, M.	44	Meguid, S.	24, 33, 65, 71
Marcal, P.	56	Mehraeen, S.	26, 75
Marchant, M.	87	Meiburg, E.	25
Marchese, A.	11	Meichor-Lucero, O.	52
Marczyk, J.	73	Meiss, R.	23
Marella, S.	40	Meng, Q.	52
Mariani, S.	55	Menon, S.	10, 21
Marin, E.	35	Menzel, A.	12, 74, 85, 94
Markov, A.	30	Merhof, D.	56
Marra, S.	91	Merkley, K.	46
		Meschke, G.	94
		Mestrovic, M.	83
		Metrikine, A.	56
		Meuleman, D.	63
		Meyer, M.	24
		Meyers, R.	46
		Michaelides, E.	40
		Michihuku, N.	71
		Michler, C.	52
		Michopoulos, J.	42, 92
		Mielewski, D.	43
		Mignolet, M.	54
		Mika, D.	56
		Miksis, M.	51
		Miller, M.	45, 56, 71
		Milner, S.	82
		Milovich, J.	62
		Mimura, Y.	25
		Min, Z.	46
		Miquel, J.	53, 94
		Miranda, A.	76
		Miranda, S.	25
		Misolek, W.	45
		Mitchell, J.	13, 24, 33, 43, 61
		Mitrovic, B.	21
		Mittal, S.	30
		Miyazaki, N.	25, 57, 96
		Miyazaki, Y.	13
		Mizoe, H.	40
		Moes, N.	45, 86
		Mogilevskaya, S.	44, 94
		Moin, P.	10
		Moita, G.	24
		Molari, L.	83
		Molinari, J.	14, 57, 94
		Moller, H.	64
		Molteni, D.	96
		Monk, P.	42
		Moore, P.	23, 32
		Moore, R.	76
		Moorthy, S.	44
		Moran, B.	52, 76
		Morbiducci, R.	23
		Morgan, H.	35
		Morita, N.	25
		Moriwaki, K.	76

Morris, J.	52, 61, 71	Neilsen, M.	54	Okuda, H.	34
Morris, W.	25	Neron, D.	65	Olson, G.	95
Moser, R.	10, 17, 21	Nesliturk, A.	92	Olson, L.	43
Mosler, J.	64	Neta, B.	51	Olsson, W.	54
Mosqueira, G.	36	Neves, M.	74	Omoto, C.	22
Mota, A.	55, 56	Newman, C.	22	Oñate, E.	27, 40, 41, 53, 62, 70, 94
Mouroutis, Z.	72	Newman, T.	26	Onipede, D.	42
Mousseau, C.	33, 71	Nguyen, N.	62	Ooue, K.	86
Mueller, J.	52, 82	Nguyen, T.	74, 85	Organ, D.	14
Mueller, R.	94	Nichita, C.	55	Orr Jr., F.	81
Mukherjee, S.	87	Niederdrenk, P.	95	Ortiz Tavara, J.	71
Muller, M.	84	Niiyama, K.	57	Ortiz, M.	15, 23, 31, 32, 35, 44, 45, 52, 55, 56, 65, 85, 86
Muller, S.	94	Niordson, C.	26	Osabe, M.	70
Munson, T.	86	Nishimura, K.	25	Osborn, J.	46
Munz, T.	43	Nishiwaki, S.	85	Osegueda, R.	52
Muradoglu, M.	40	Nitsche, M.	41	Osemwengie, I.	21
Muraleetharan, K.	42	Nitta, C.	64	Oshima, M.	30, 31, 41
Murali, V.	90	Nobile, F.	62, 83	Oshmarin, A.	83
Murata, K.	57	Noble, C.	54	Overfelt, J.	63
Musson, L.	60	Noble, D.	40	Owen S.	45
Myers, P.	56	Noels, L.	63	Owen, D.	24
<b>N</b>		Noguchi, H.	87, 96	Owen, R.	67
Nagai, H.	57	Norato, J.	55	Owen, S.	15, 26, 35, 46, 65, 75, 86
Nagai, M.	40	Noritomi, P.	71	<b>Ö</b>	
Nagaraj, A.	82	Notz, P.	81	Ök, A.	71
Nagashima, T.	57	Nouy, A.	45	Özdemir, I.	33
Nagornov, O.	90	Nukala, P.	14, 63, 74	Özüpek, S.	71
Nagrath, S.	60, 82	Nunn, N.	62	<b>P</b>	
Nagtegaal, J.	32, 71	<b>O</b>		Paez, T.	43, 63
Najm, H.	10, 84	Oancea, V.	73	Pajot, J.	34, 61
Nakagawa, H.	14	Oberai, A.	13, 21, 43, 54	Palaniappan, J.	12, 62, 65
Nakajima, A.	86	Oberkampf, W.	93	Palmer, M.	52
Nakamura, H.	34	O'Daniel, J.	61, 71	Pamin, J.	76
Nakasumi, S.	76	O'Day, M.	44	Pan, G.	82
Namazifard, A.	12	Oden, J.	13, 62, 81	Pan, T.	70
Narayan, S.	10	Ogino, M.	36	Pandolfi, A.	44
Narayanan, H.	12	Oguni, K.	14, 83	Pandy, A.	11
Narayanan, V.	54	Oh, K.	95	Paolucci, S.	30, 60
Navarrina, F.	36	Oh, W.	41	Papachristidis, A.	72
Nayak, H.	82	Ohayon, R.	52, 61, 71, 82	Papadopoulos, P.	32, 56, 75
Neal, M.	24, 33	Ohta, T.	71	Papados, P.	61
Needleman, A.	15, 17, 26, 44	Ohtake, Y.	96	Papadrakakis, M.	25, 62, 72, 92, 93
Neeman, H.	85	Ohtsubo, H.	34, 57, 76, 96		
Neff, P.	23, 32	Okazawa, S.	22		

Papanicolaou, G. .... 13  
 Papavassiliou, D. .... 21, 85  
 Papoulia, K. .... 85  
 Pardo, D. .... 23  
 Parés, N. .... 62  
 Park, H. .... 14, 27  
 Park, K. .... 13, 83, 84  
 Park, S. .... 70, 76  
 Park, Y. .... 84  
 Parker, D. .... 82  
 Parker, S. .... 73  
 Parks, D. .... 15  
 Parsons, D. .... 12, 23, 32, 42  
 Parthasarathy, T. .... 35  
 Patankar, N. .... 10, 21, 40, 51  
 Patera, A. .... 62  
 Patlashenko, I. .... 51  
 Patra, A. .... 12, 13, 32, 54, 55, 74, 84  
 Pattillo II, P. .... 24, 61  
 Pauca, V. .... 33  
 Paulino de Romero, R. .... 13, 62, 81  
 Paulino, G. .... 25, 34, 44, 55, 64, 74, 85, 94  
 Paulsen, K. .... 43, 52, 87  
 Pavanello, R. .... 65  
 Pavel, M. .... 91  
 Pawłowski, R. .... 10, 30  
 Paz, C. .... 34  
 Pei, L. .... 57  
 Pember, R. .... 11  
 Peng, Z. .... 36  
 Penmetsa, R. .... 64  
 Peraire, J. .... 33, 62, 72, 83, 92  
 Perego, U. .... 55  
 Peric, D. .... 24, 41  
 Perucchio, R. .... 31, 51  
 Pesavento, F. .... 55  
 Peskin, C. .... 11, 40  
 Peterson, J. .... 41  
 Peterson, L. .... 54, 63  
 Petersson, A. .... 63  
 Petracovici, B. .... 42  
 Petrov, E. .... 73, 84  
 Pfeil, M. .... 23  
 Phelan Jr., F. .... 41  
 Picu, C. .... 56

Picu, R. .... 91  
 Pidaparti, R. .... 23  
 Pierson, K. .... 82, 83, 93  
 Pietrzak, J. .... 90  
 Pilch, M. .... 64  
 Piltner, R. .... 72  
 Pimenta, P. .... 26  
 Pinheiro, M. .... 24  
 Pitman, E. .... 55  
 Pizarro, D. .... 75  
 Plass, R. .... 25  
 Plemmons, R. .... 33  
 Plimpton, S. .... 60  
 Ploumhans, P. .... 73  
 Podariu, S. .... 40  
 Pontaza, J. .... 22  
 Pontaza, J.P. .... 55  
 Ponthot, J. .... 63  
 Potier-Ferry, M. .... 26  
 Powers, J. .... 30  
 Prasad, M. .... 23, 62  
 Prasad, S. .... 33  
 Predencio, E. .... 36  
 Preece, D. .... 85  
 Prevost, J. .... 66  
 Proft, J. .... 12, 53  
 Protas, B. .... 27  
 Prudhomme, C. .... 62  
 Prudhomme, S. .... 62  
 Pulin, D. .... 21  
 Pullin, D. .... 30  
 Puso, M. .... 22, 23

**Q**

Qian, D. .... 16, 46  
 Qian, L. .... 14, 96  
 Qiao, R. .... 21  
 Qiu, X. .... 94  
 Qu, S. .... 26, 35, 44  
 Quadros, R. .... 75  
 Quadros, W. .... 75  
 Quaranta, F. .... 33  
 Quinlan, D. .... 63  
 Quinn, D. .... 63, 73

**R**

Rabczuk, T. .... 46, 66  
 Rachowicz, W. .... 23, 32  
 Radhakrishnan, B. .... 35  
 Radovitzky, R. .... 11, 15, 26, 31, 45  
 Radtke, G. .... 61  
 Raghavan, M. .... 12, 82  
 Raghavan, P. .... 75  
 Ragulskis, M. .... 33  
 Rahman, S. .... 25, 87  
 Rahmatalla, S. .... 85  
 Rajan, M. .... 63  
 Rajendran, S. .... 83  
 Rakshit, A. .... 74  
 Ramakrishnan, S. .... 10  
 Ramm, E. .... 11, 31, 33, 41, 51, 62, 72, 90  
 Randles, P. .... 76  
 Rao, B. .... 25, 87  
 Rao, R. .... 40, 52, 61, 70, 71  
 Rassineux, A. .... 57  
 Rastgejev, Y. .... 30  
 Rasuo, B. .... 83  
 Raulli, M. .... 14  
 Ravi-Chandar, K. .... 34  
 Ray, T. .... 14  
 Reagan, M. .... 84  
 Rebba, R. .... 63  
 Rebel, G. .... 13  
 Redanz, P. .... 26  
 Reddy, J. .... 22, 55, 60, 64, 70  
 Reddy, S. .... 31, 41  
 Red-Horse, J. .... 43, 54, 93  
 Reese, G. .... 82, 84, 93  
 Regueiro, R. .... 35, 74  
 Reich, G. .... 64  
 Reichel, L. .... 54  
 Reichenberger, V. .... 63  
 Rejniak, K. .... 11  
 Remacle, J. .... 12, 62, 86  
 Ren, Z. .... 24  
 Renzi, J. .... 32  
 Rhee, I. .... 34  
 Riaz, A. .... 25  
 Rice, J. .... 42

Richards, S.	56	Sama, K.	44	Shadid, J.	10, 30, 72, 73
Rigby, P.	61	Samanta, D.	83	Shapiro, B.	10, 21
Riggs, H.	83	Sameh, A.	10, 21	Shapiro, V.	11, 76
Riou, H.	81	Samulyak, R.	41	Sharma, N.	40, 51
Rispoli, F.	21	Sandhu, S.	23, 42	Shashkov, M.	11, 26, 45, 83
Rivara, M.	75	Sando, A.	34	Shaskov, M.	22
Roache, P.	55	Sansour, C.	16, 87, 92	Shehadeh, M.	65
Robbins, D.	73	Sarma, G.	35	Shen, L.	35, 87
Robbins, M.	57	Sarma, P.	23	Shen, Y.	16, 95
Roberts, D.	43	Sathe, S.	10, 30	Shenoy, M.	65
Roberts, M.	71	Sato, Y.	87	Shepard, M.	15, 35, 56, 75, 95
Robertson, I.	25	Sawamura, J.	57	Shephard, M.	12, 15, 46, 56, 61, 62, 65, 75, 82, 90
Robinson, A.	22, 41	Schafer, B.	14	Shepherd, J.	15, 35, 56
Robinson, C.P.	7	Scheer, S.	86	Sherman, M.	63
Rochinha, F.	13, 44, 55, 81	Schiava, R.	64	Sherykhalina, N.	72, 83
Rodrigues, H.	74	Schmauder, S.	36, 95	Shestakov, A.	62
Rodriguez, J.	73	Schmidt, K.	23	Shi, J.	65
Rohrer, G.	76	Schmidt, R.	30, 60	Shi, M.	75
Rojas, O.	57	Schoeberl, J.	42, 53	Shigeno, Y.	96
Rojek, J.	53, 94	Schranz, C.	15	Shimada, K.	57, 75
Romero, V.	63	Schrefler, B.	55, 65	Shimizu, T.	30
Romkes, A.	81	Schreyer, H.	16, 74	Shin, C.	95
Rouch, P.	81	Schroder, J.	32	Shing, B.	34
Roy, A.	26, 95	Schueller, G.	84	Shioya, R.	31, 36
Roy, C.	72	Schultz, P.	15	Shontz, S.	86
Rudd, R.	45	Schumacher, K.	52	Shu, C.	12, 42
Rudnicki, J.	14, 25	Schumauder, S.	46	Sicilian, J.	51
Ruge, J.	36	Schunk, P.	40, 70, 81, 90	Sidhu, R.	64
Runesson, K.	86, 92	Schwab, C.	23	Sidle, B.	45
Russo, L.	91	Schweitzer, M.	16, 36	Siegmund, T.	44
Rylo, E.	12	Schweizerhof, K.	15, 26, 43	Sigmund, O.	44, 74
<b>S</b>		Schwer, L.	55, 64	Silva, E.	33, 57
Sacco, R.	32	Scott, M.	35, 91	Simon, B.	61
Sacks, M.	91	Segalman, D.	54, 63, 73, 84	Simunovic, S.	14, 63, 74
Sadiki, A.	30	Seguchi, K.	71	Singh, S.	30
Saheli, G.	56	Seigmund, T.	25, 34	Sivakumar, S.	15
Sahin, K.	14	Sejnoha, M.	56, 65	Skallerud, B.	72
Saigal, S.	14, 76	Sekiguchi, M.	83	Skatulla, S.	16
Saigal, S.	15	Semenov, V.	31	Skurin, L.	31
Saiki, I.	86	Seppala, E.	45	Slaats, P.	43
Sakai, H.,	30	Serban, R.	27	Smith, N.	73
Salinger, A.	10, 21	Serebrinsky, S.	44	Smith, S.	46, 81
Salvadori, A.	55	Seriani, G.	60	Smith, T.	21, 30
Sam, C.	85	Seshaiyer, P.	22, 61	Smolinski, P.	71, 82
		Sha, D.	24, 61	Snyman, M.	71

Socrate, S.....	23	Sullivan, Jr., J.....	76
Sofiyev, A.....	26	Sulsky, D.....	16, 23, 27, 74
Sokolov, E.....	90	Sumali, A.....	82
Solanki, K.....	36	Sun, H.....	52
Solasi, R.....	55	Sun, L.....	25, 34, 65, 86
Solberg, J.....	23, 42, 54	Sun, S.....	51, 53
Sollero, P.....	65, 71	Sun, W.....	91
Soman, N.....	27	Suo, Z.....	66
Soneda, N.....	95	Surana, K.....	60, 70
Song, G.....	54	Suryo, R.....	81
Song, Y.....	73	Suwa, Y.....	65
Soon, S.....	23	Suzuki, K.....	34, 57, 66, 76, 96
Sotelino, E.....	73	Suzuki, T.....	71, 81
Soulaïmani, A.....	70	Swan, C.....	32, 85
Spearot, D.....	25	Swim, E.....	61
Spilker, R.....	82	Symeonidis, V.....	91
Sprague, M.....	82	Szabo, B.....	12, 32
Srinark, T.....	57	Sze, K.....	62, 72, 83, 92
Srinivasan, S.....	23, 42	<b>T</b>	
Stadler, M.....	24, 31, 61	Tabiei, A.....	33
Stainier, L.....	63	Tafti, D.....	10, 30
Stanciulescu, I.....	33	Tagami, D.....	31, 36
Starbuck, J.....	74	Takagi, K.....	30, 41
Staubach, R.....	94	Takahashi, A.....	91, 95
Steen, P.....	41	Takaki, T.....	35
Stein, K.....	30, 41	Taki, Y.....	71
Steinmann, P.....	12, 85, 94	Takizawa, K.....	40
Stelling, G.....	90	Tamma, K.....	23, 24, 32, 42, 61
Stephenson, M.....	35, 56	Tan, E.....	86
Steven, G.....	63	Tang, M.....	75, 86
Stewart, J.....	62, 72, 83, 92	Taniguchi, T.....	76
Stimpson, C.....	46	Tautges, T.....	46, 87
Stockwell, A.....	13, 54	Taylor, C.....	7, 41, 70, 76, 82
Stolarski, H.....	13, 23	Taylor, C.....	7
Stolle, D.....	81	Taylor, L.....	42
Strachan, A.....	15	Taylor, R.....	24, 33, 53
Strain, J.....	90	Tchijov, V.....	90
Strouboulis, T.....	65, 83, 86	Tejada-Martinez, A.....	30, 92
Stuebner, M.....	34, 74	Tejchman, J.....	85
Stumvoll, M.....	94	Telukunta, S.....	87
Sudarshan, R.....	53	Tempone, R.....	54
Sugiura, S.....	30	Tenpas, P.....	60, 70
Suh, J.....	61, 71	Terada, K.....	85, 86, 87, 95
Sukumar, N.....	66, 87	Tezduyar, T.....	10, 21, 30, 40, 41, 60, 72, 81
Sullivan, J.....	52, 65	<b>U</b>	
		Uchic, M.....	35
		Uchida, M.....	26
		Udaykumar, H.....	40
		Udaykumar, H.S.....	31
		Uhlmann, G.....	24
		Ungor, M.....	10

**V**

- Vachal, P. .... 26  
Vakakis, A. .... 73  
Valentin, F. .... 62  
van Bloemen Waanders, B. .... 10, 25  
van Brummelen, E. .... 52  
van de Geijn, R. .... 63  
Van der Giessen, E. .... 15, 26  
Van der Gracht, J. .... 33  
van der Zee, K. .... 31  
van Hoof, J. .... 63  
van Joolen, V. .... 51  
Vasilyev, O. .... 10  
Vassilevski, Y. .... 87  
Vaughan C. .... 23  
Vemaganti, K. .... 25, 34, 74, 92  
Verdier, M. .... 95  
Veroy, K. .... 62  
Vesenjak, M. .... 24  
Vielsack, P. .... 15  
Viera, M. .... 52  
Vignon, I. .... 70  
Vijalapura, P. .... 30  
Vik, T. .... 14  
Villamizar, V. .... 57  
Villon, P. .... 57, 96  
Vlahopoulos, N. .... 64  
Volakis, J. .... 44  
Voller, V. .... 94  
Voth, T. .... 24, 60, 61, 90  
Vun, P. .... 64  
Vu-Quoc, L. .... 43  
Vyas, V. .... 35

**W**

- Waanders, B. .... 27  
Wachutka, G. .... 32  
Wagner, G. .... 27  
Waisman, H. .... 73  
Walker, S. .... 21  
Walkington, N. .... 87, 90  
Wall, W. .... 11, 22, 41, 51, 72, 90, 92  
Wall, W.A. .... 33  
Wallin, B. .... 11

- Walsh, J. .... 46  
Walsh, T. .... 82, 93  
Walters, M. .... 25  
Walton, J. .... 85  
Walton, K. .... 35  
Wan, J. .... 56, 65  
Wan, R. .... 25  
Wan, Z. .... 73  
Wanderer, J. .... 21  
Wang, A. .... 64  
Wang, C. .... 53  
Wang, D. .... 16, 66, 83  
Wang, G. .... 15  
Wang, H. .... 11, 31, 70, 76, 87  
Wang, J. .... 22, 23, 24, 25, 43, 94  
Wang, M. .... 55  
Wang, Q. .... 82, 91  
Wang, X. .... 30, 40, 51, 55  
Wang, Y. .... 72  
Wang, Z. .... 65  
Warburton, T. .... 23, 62  
Wardlaw, A. .... 32  
Watanabe, H. .... 30  
Watanabe, T. .... 57  
Wathugala, G. .... 63  
Watts, M. .... 21, 70  
Wawrzynek, P. .... 14, 44  
Weatherill, N.P. .... 15  
Weaver, J. .... 87  
Webb, S. .... 24  
Weber, U. .... 36  
Weed, R. .... 61  
Wei, G. .... 72, 82, 96  
Wei, K. .... 51  
Wei, Y. .... 43  
Weinberg, K. .... 32, 55  
Wendroff, B. .... 11  
Wetherhold, R. .... 74  
Wheeler, M. .... 14, 53  
White, D. .... 15, 35, 76  
White, J. .... 81  
Widlund, O. .... 36  
Wiedemann-Goiran, P. .... 60  
Wierer, M. .... 56  
Wiggs G. .... 27

- Wilkes, E. .... 70  
William, K. .... 34  
Williams, J. .... 85, 93, 94  
Williams, S. .... 61  
Williams, T. .... 74  
Willner, K. .... 43  
Winckelmans, G. .... 21, 41  
Windle, J. .... 43  
Wirnitzer, J. .... 84  
Wisniewski, K. .... 24  
Wittum, G. .... 63, 73, 84, 93  
Wohlever, C. .... 33  
Wohlmuth, B. .... 22, 31  
Wojtkiewicz, Jr., S. .... 73  
Wojtkiewicz, S. .... 63, 73, 84, 93  
Wolf, D. .... 56  
Wolfer, W. .... 56  
Wong, X. .... 51  
Wotring, D. .... 34  
Wriggers, P. .... 26, 33, 43, 92  
Wu, C. .... 76, 87  
Wu, L. .... 60  
Wu, P. .... 44  
Wu, S. .... 13, 43, 63  
Wu, Y. .... 36  
Wu, Z. .... 52, 76, 87  
Wunsch, S. .... 30

**X**

- Xia, K. .... 62  
Xiang, Y. .... 82, 96  
Xiao, J. .... 96  
Xiao, S. .... 46  
Xie, Y. .... 63  
Xin, X. .... 75, 76  
Xu, G. .... 65, 75  
Xu, H. .... 26  
Xu, S. .... 14  
Xu, Z. .... 11  
Xue, D. .... 42
- Y**
- Yabe, T. .... 40  
Yagawa, G. .... 21, 34, 46, 52, 57, 95  
Yakobson, B. .... 16

Yamada, T.	33	Youn, B.	14
Yamakawa, S.	57	Youn, S.	76, 87
Yamaleev, N.	81	Youngblood, S.	64
Yamauchi, T.	91	Yuan, M.	51
Yan, J.	42	Yue, X.	84
Yang, B.	13	Yue, Z.	73
Yang, K.	13	Yurick, T.	15
Yang, Q.	55, 56	Yurkov, Y.	31
Yang, R.	44, 54		
Yang, Z.	64	Z	
Yanukyan, E.	72	Zabaras, N.	35, 54, 56, 83
Yashiro, K.	95	Zahid, M.	70
Yates, R.	60	Zandonade, P.	21
Yazicioglu, A.	10	Zarate, F.	94
Yeckel, A.	10, 11	Zavattieri, P.	44, 85
Yeon, J.	87	Zbib, H.	65
Yin, H.	25	Zdunek, A.	23
Yin, L.	65, 81	Zeghal, M.	55
Yoo, J.	76, 87	Zeigler, D.	63
Yoo, W.	25	Zellars, B.	21
Yoon, J.	24	Zeman, J.	56
Yoshida, T.	91	Zeng, L.	53
Yoshimura, S.	25, 52, 71	Zhang, J.	51, 52
Yoshino, K.	57	Zhang, L.	51, 57, 61, 65, 66, 86
Yosibash, Z.	12, 42	Zhang, P.	16, 55
		Zhang, Q.	76
		Zhang, W.	64
		Zhang, X.	43, 74
		Zhang, Z.	55, 72, 85
		Zhao, P.	40
		Zhao, Y.	16, 72, 82, 96
		Zhao, Z.	15
		Zhitnikov, V.	72, 83
		Zhou, F.	94
		Zhou, M.	36, 64, 65, 75
		Zhou, Q.	24
		Zhou, R.	91
		Zhou, X.	24, 61
		Zhou, Y.	75
		Zhu, B.	42, 84
		Zhu, J.	51, 95
		Zhuang, S.	45
		Zi, G.	55, 94
		Zienkiewicz, O.	53
		Zimmerman, J.	75
		Zohdi, T.	56, 75
		Zouraris, G.	54
		Zumbusch, G.	42, 53
		Zuo, J.	35



Map and Technical Program at a Glance



# Albuquerque Convention Center Map

