8th International LS-DYNA Users Conference

May 2- 4, 2004
Hyatt Regency Dearborn
Dearborn, Michigan

Sunday May 2nd

11:00 a.m. - 5:00 p.m.   **Golf Outing, Links of Novi** *"Sponsored by ETA"*

11:30 p.m. - 5:00 p.m.   **Baseball Game** *Detroit Tigers vs. Seattle Mariners,* Comerica Park *"Sponsored by ETA"*

5:00 p.m. - 6:00 p.m.   **Registration** *"Sponsored by IBM"*   Outside of the Hubbard Foyer

5:00 p.m. - 6:00 p.m.   **Pre-Conference Seminar:** *"VPG 3.0 A New Pre/Post Environment for LS-DYNApc"* Springwells Ballroom

6:00 p.m. - 8:00 p.m.   **Welcome Reception** *"Sponsored by Linux Networx"*   Dearborn Ballroom

5:00 p.m. - 8:00 p.m.   **Exhibition**   Hubbard Foyer

Monday May 3rd

7:30 a.m. – 4:00 p.m.	Registration *"Sponsored by IBM"*	**Outside of the Hubbard Foyer**
7:30 a.m. – 8:20 p.m.	Continental Breakfast *"Sponsored by NEC"*	**Dearborn Ballroom**
8:00 a.m. – 6:00 p.m.	Exhibition	**Hubbard Foyer**
8:20 a.m.	Welcome and Opening Remarks	**Springwells Ballroom**

8:35 a.m.   Keynote Presentations   **Springwells Ballroom**

8:35   **Dr. Priya Prasad**   *"Future Challenges in Vehicle Safety"*
Ford Technical Fellow
Safety Research & Advanced Engineering
Ford Motor Company

9:20   **Dr. Ted Belytschko**   *"Developments and Challenges in Computational Mechanics"*
Walter P. Murphy Professor
Northwestern University

10:05 a.m.   *Coffee Break – "Sponsored by RackSaver"*   **Dearborn Ballroom**

10:20 **Mr. Lawrence J. Achram**   *"Powering the Record Chrysler Group Product Onslaught"*
Vice President
Virtual Engineering and Crossfire
DaimlerChrysler Corporation

11:00 a.m.   Common Session   **Springwells Ballroom**

11:00 **Development of Shipping Package Drop Analysis Capability at Westinghouse**
J. F. Staples, Westinghouse Electric Company LLC, Columbia, SC

11:30 **A Summary of the Space Shuttle Columbia Tragedy and the Use of LS-DYNA
in the Accident Investigation and Return to Flight Efforts**
Matthew Melis, NASA Glenn Research Center, Cleveland, OH

12:00 p.m.   Lunch – *"Sponsored by HP"*   **Dearborn Ballroom**

1:00 p.m.   Session 1 -- Crash / Safety (1)   **Springwells Ballroom**

1:00 **Prediction of Seat Deformation in Rear Crash Using LS-DYNA**
Biswanath Nandi, Lear Corporation

1:25 **Strain Rates in Crashworthiness**
Moisey B. Shkolnikov

1:50 **An Evaluation of Active Knee Bolsters**
Zane Z. Yang, Delphi Corporation

2:15 **Development of a Hybrid Energy Absorbing Reusable Terminal (HEART) Using Finite Element Modeling in LS-DYNA for Roadside Safety Applications**
Nauman M. Sheikh, Texas Transportation Institute, The Texas A&M University System

2:40 **Curved Barrier Impact of a NASCAR Series Stock Car**
Eric A. Nelson, Altair Engineering, Troy, MI

1:00 p.m.   Session 2 -- Methods Development   **Stanley Steamer Suite**

1:00 **A Process of Decoupling and Developing Optimized Body Structure for Safety Performance**
John M. Madakacherry , Technical Specialist, General Motors

1:25 **Virtual Try Out and Process Optimization for an Innovative Conic Poles Production Concept**
A. Anglani, Department of Innovation Engineering, University of Lecce, Italy

1:50 **FEA - Calculation of the Hydroforming Process with LS-DYNA**
Michael Keigler, Aalen University, Germany

2:15 **Implicit and Explicit Finite Element Simulation of Soft-Pad Grinding of Silicon Wafers**
A.H. Zhao, Department of Industrial and Manufacturing Systems Engineering, Kansas State University

2:40 **FEA – Simulation of Bending Processes with LS-DYNA**
Peter Gantner, Aalen University, Germany

1:00 p.m.   Session 3 -- Simulation Technolgy (1)   **Stearns Knight Suite**

1:50 **The Use of LS-DYNA in the Columbia Accident Investigation and Return to Flight Activities**
Jonathan Gabrys, The Boeing Company, Philadelphia,PA

1:25 **Test and Analysis Correlation of Foam Impact onto Space Shuttle Wing Leading Edge RCC Panel 8**
Edwin L. Fasanella, US Army Research Laboratory, Vehicle Technology Directorate, Hampton, VA

1:00 **Application of Non-Deterministic Methods to Assess Modeling Uncertainties for Reinforced Carbon-Carbon Debris Impacts**
K. Lyle, NASA Langley Research Center, Hampton, VA

2:15 **Material Modeling of Space Shuttle Leading Edge and External Tank Materials for Use in the Columbia Accident Investigation**
Kelly Carney, NASA Glenn Research Center Cleveland, OH

2:40 **Modeling the Nonlinear, Strain Rate Dependent Deformation of Shuttle Leading Edge Materials with Hydrostatic Stress Effects Included**
Robert K. Goldberg, NASA Glenn Research Center, Cleveland, OH

1:00 p.m.   Session 4 -- Fluid/Structure   Pierce Arrow Suite

1:00 **The Use of LS-DYNA to Simulate the Water Landing Characteristics of Space Vehicles**
Benjamin A. Tutt, Irvin Aerospace Inc, Santa Ana, CA

1:25 **Modeling of Fuel Sloshing Phenomena Considering Soild-Fluid Interaction**
Jean Ma, Plastics Products and Processing CAE, Visteon Corporation

1:50 **Investigation of the Arbitrary Lagrangian Eulerian Formulation to Simulate Shock Tube Problems**
C.P. Salisbury, University of Waterloo, Ontario, Canada

2:15 **The Effects of Numerical Results and Computing Time Due to Mass Scaling in Rolling Analysis**
J.Y. Chin, Theme Engineering Inc, Korea

2:40 **ALE and Fluid Structure Interaction in LS-DYNA**
M. Souli, Laboratoire de Mécanique de Lille, France

3:05 p.m.   **Coffee Break – *Sponsored by RackSaver***   **Dearborn Ballroom**

3:20 p.m.   Session 5 -- Crash/Safety (2)   Springwells Ballroom

3:20 **Study of a Driver Airbag Out-Of-Position Using ALE Coupling**
Wenyu Lian, General Motors

3:40 **A Benchmark Study of CAE Sensor Modeling Using LS-DYNA**
C. C. Chou, Passive Safety R&A, Ford Motor Company

4:10 **A FE Modeling and Validation of Vehicle Rubber Mount Preloading and Impact Response**
Sae U. Park, DaimlerChrysler Corporation

4:35 **Influence of Pre-stressed Parts in Dummy Modeling - Simple Considerations -**
Ulrich Franz, DYNAmore, Germany

5:00 **IIHS Side Impact Analysis Using LS-DYNA/Madymo Coupling**
Jiri Kral, TNO Madymo North America, Livonia, MI

5:15 **FEM for Impact Energy Absorption with Safety Plastic**
Iulian Lupea, The Oakwood Group, Dearborn, MI

3:20 p.m.   Session 6 -- Material Technology   Stanley Steamer Suite

3:20 **Modeling Crushable Foam for the SAFER Racetrack Barrier**
Robert W. Bielenberg, Midwest Roadside Safety Facility, University of Nebraska-Lincoln, Lincoln, NE

3:45 **Implementation of a Constitutive Model for Aluminum Foam Including Fracture and Statistical Variation of Density**
A. Reyes, Structural Impact Laboratory (SIMLab), Department of Structural Engineering, Norwegian University of Science and Technology, Trondheim, Norway

4:10 **Theory and Evaluation of Concrete Material Model 159**
Yvonne D. Murray, APTEK, Inc., Colorado Springs, CO

4:35 **A Model for Process-Based Crash Simulation**
O.-G. Lademo, SINTEF Materials and Chemistry, Structural Impact Laboratory (SIMLab) Department of Structural Engineering, Norwegian University of Science and Technology, Trondheim, Norway

5:00 **Application of LS-DYNA in Identifying Critical Stresses Around Dowel Bars**
Samir N. Shoukry, West Virginia University, Morgantown, WV

5:25 **Formability Modeling with LS-DYNA**
Torodd Berstad, SINTEF Materials and Chemistry, Trondheim, Norway

3:20 p.m.   Session 7 -- Simulation Technology (2)   Stearns Knight Suite

3:20 **Finite Element Analysis of Unanchored Structures Subjected to Seismic Excitation**
Sreten Mastilovic, Bechtel SAIC Company, LLC

5:25 **Validation of LS-DYNA Computer Code for Seismic Qualification of Reactivity Control Mechanisms**
A.S. Banwatt, Atomic Energy of Canada Ltd., Mississauga, Ontario, Canada

3:45 **A Study on Shock Wave Propagation Process in the Smooth Blasting Technique**
Masahiko Otsuka, Graduate School of Science and Technology, Kumamoto University, Japan

4:10 **Vulnerability of Bridge Piers to Impact by Heavy Vehicles**
Sherif El-Tawil, Dept. of Civil and Env. Eng., U. of Michigan, Ann Arbor, MI

4:35 **Modeling of Welded Structures Residual Strains**
Sergey Medvedev, United Institute of Informatics Problems, National Academy of Sciences of Belarus, Minsk, Republic of Belarus, Russia

5:00 **Nonlinear Finite Element Analysis of Airport Approach Lighting Structures Under Impact Loading**
M. Nejad Ensan, Institute for Aerospace Research, National Research Council, Canada

3:20 p.m.   Session 8 -- Penetration/Explosive Modeling   Pierce Arrow Suite

3:20 **Preliminary Assessment of Non-Lagrangian Methods for Penetration Simulation**
Leonard E. Schwer, Schwer Engineering & Consulting Services, Windsor, CA

3:45 **Energy Absorbing Sandwich Structures Under Blast Loading**
Dong Kwan (David) Lee, Department of Mechanical Engineering, University of Nevada, Las Vegas, Las Vegas, NV

4:10 **Transient Response of a Projectile in Gun Launch Simulation Using Lagrangian and ALE Methods**
Ala Tabiei, Department of Aerospace Engineering & Engineering Mechanics, University of Cincinnati, Cincinnati, OH

4:35 **Effects of Pre-Pressurization on Plastic Deformation of Blast-Loaded Square Aluminum Plates**
R.L. Veldman, Hope College, Department of Physics and Engineering, MI

5:00 **Explosive Welding of Light Weight Metal Sheets**
Yamato Matsui, Graduate School of Science and Technology, Kumamoto University, Japan

5:25 **Simulation of Energy Absorbing Materials in Blast Loaded Structures**
Michael J. Mullin, Department of Mechanical Engineering, University Nevada Las Vegas, Las Vegas, NV

5:50 **Moving Beyond the Finite Elements, a Comparison Between the Finite Element Methods and Meshless Methods for a Ballistic Impact Simulation**
Murat Buyuk, FHWA/NHTSA-NCAC, National Crash Analysis Center, The George Washington University, Ashburn, VA

6:00 Exhibition closes for the day

7:00 p.m. – 9:00 p.m.   Conference Banquet – *"Sponsored by Intel and SGI"*   Dearborn Ballroom

7:00 a.m. – 8:00 p.m.	Continental Breakfast *"Sponsored by Cray"*	Dearborn Ballroom
7:30 a.m.	Registration *"Sponsored by IBM"*	Outside of the Hubbard Foyer
8:00 a.m. – 4:00 p.m.	Exhibition	Hubbard Foyer

8:00 a.m.   Session 9 -- Metal Forming Technology (1)   **Springwells Ballroom**

8:00 **Review of Sheet Metal Forming Simulation – Progress to Date, Future Developments**
Trevor Dutton, Dutton Simulation Ltd, UK, England

8:25 **An Eulerian Finite Element Model of the Metal Cutting Process**
A. Raczy, Department of Mechanical, Automotive and Materials Engineering, University of Windsor, Ontario, Canada

8:50 **Determination of Optimal Cutting Conditions in Orthogonal Metal Cutting Using LS-DYNA with Design of Experiments Approach**
David P. Masillamani, Department of Mechanical and Industrial Engineering, University of Texas at El Paso, El Paso, TX

9:15 **Simulation and Analysis of the Beverage Can Necking Process Using LS-DYNA**
Jordan-Cordera, Mechanical Engineering Department, ITESM Campus Toluca, Mexico

9:40 **Learning Module for Using Dynaform® to Study the Effects of Die-Entry and Punch-Nose Radii on Drawing Cups**
W.K. Waldron, Mechanical Engineering Department, Kettering University, Flint, MI

8:00 a.m.   Session 10 -- Optimization   **Stanley Steamer Suite**

8:00 **LS-OPT Capabilities for Robust Design**
Nielen Stander, Livermore Software Technology Corporation, Livermore, CA

8:25 **Crashworthiness Design of Vehicle Structures via Equivalent Mechanism Approximations**
Karim Hamza, Department of Mechanical Engineering, University of Michigan, Ann Arbor, MI

8:50 **Horizontal Tailplane Subjected to Impact Loading**
M. Hörmann, CAD-FEM GmbH, Grafing/Munich, Germany

9:15 **Robustness Study of an LS-DYNA Occupant Simulation Model at DaimlerChrysler Commercial Vehicles using LS-OPT**
Frank C. Günther, Commercial Vehicles Analysis, DaimlerChrysler

9:40 **An Investigation of Structural Optimization in Crashworthiness Design Using a Stochastic Approach**
Larsgunnar Nilsson, Engineering Research Nordic AB, Sweden

8:00 a.m.   Session 11 -- Simulation Technology (3)   **Stearns Knight Suite**

8:00 **Development of an LS-DYNA Model of an ATR42-300 Aircraft for Crash Simulation**
Karen E. Jackson, U.S. Army Research Laboratory, Vehicle Technology Directorate, Hampton, VA

8:25 **Simulation of Cure Volume Shrinkage Stresses on Carbon/Vinyl Ester Composites in Microindentation Testing**
Tom Mase, Composite Materials and Structures Center, Michigan State University, East Lansing, MI

8:50 **Effect of Triggering Mechanism on the Load-Displacement Response and Folding Pattern of Square Aluminum Tubes**
H. El-Hage, University of Windsor, Ontario, Canada

9:15 **Numerical Modeling of Woven Carbon Composite Failure**
Paul F. Deslauriers, University of Waterloo, Ontario, Canada

9:40 **LS-DYNA Implicit for Dent Performance Evaluation**
Gagan Tandon, Altair Engineering Inc., Allen Park, MI

8:00 a.m.   Session 12 -- Computing/Code Technology (1)   Pierce Arrow Suite

8:00 **LS-DYNA Communication Performance Studies**
Ananthanarayanan Sugavanam, High Performance Computing, IBM

8:25 **Improving Crash Analysis by Increasing Throughput of Large-Scale Simulations**
Dale I. Dunlap, Platform Computing, Ontario, Canada

8:50 **Determining the MPP LS-DYNA Communication and Computation Costs with the 3-Vehicle Collision Model and the Infiniband Interconnect**
Yih-Yih Lin, Hewlett-Packard Company

9:15 **SPH Performance Enhancement in LS-DYNA**
Gregg Skinner, Advanced Technical Computing Center NEC Solutions (America), Inc.

9:40 **Experiences with LS-DYNA Implicit MPP**
Cleve Ashcraft, Livermore Software Technology Corporation, Livermore, CA

10:05 a.m.   Coffee Break – *"Sponsored by RackSaver"*   Dearborn Ballroom

10:25 a.m.   Session 13 -- Metal Forming Technology (2)   Springwells Ballroom

10:25 **Numerical Simulation of Aluminum Alloy Forming Using Underwater Shock Wave**
Hirofumi Iyama, Dept. of Mechanical and Electrical Engineering, Yatsushiro National College of Technology, Japan

10:50 **Through Process Modelling of Self-Piercing Riveting**
R. Porcaro, Structural Impact Laboratory (SIMLab), Department of Structural Engineering, Norwegian University of Science and Technology, Trondheim, Norway

11:15 **Application of FEA in Stamping Auto Underbody Parts**
Yuyuan Wang, Canadian Engineering & Tool, Windsor, Ontario, Canada

11:40 **The Dynamic Problems in High Speed Transfer Stamping System**
Ming-Chang Yang, Metal Industries Research and Development Centre, Taiwan

12:05 **A New Concept on Stamping Die Surface Compensation**
Li Zhang, Theme Development Department, Advance Stamping Manufacturing Engineering, DaimlerChrysler Corporation

10:25 a.m.   Session 14 -- Drop and Impact Simulation   **Stanley Steamer Suite**

10:25 **Drop Simulation for Portable Electronic Products**
Raymon Ju, Flotrend Corporation, Taipei, Taiwan

10:50 **Simulation and Verification of the Drop Test of 3C Products**
Hsing-Ling Wang, Aviation Management Department, Chinese Air Force Academy, Taiwan

11:15 **Predictive Numerical Modeling of Foreign Object Damage**
Pierangelo Duó, Department of Engineering Science, University of Oxford, UK, England

11:40 **Blast Impact on Aluminum Foam Composite Sandwich Panels**
Rajan Sriram, Department of Materials Science & Engineering, The University of Alabama at Birmingham, Birmingham, AL

12:05 **Numerical Modeling of Ballistic Penetration of Long Rods into Ceramic/Metal Armors**
Khodadad Vahedi, Department of Mechanical Engineering, Louisiana Tech University

10:25 a.m.   Session 15 -- Visualization   **Stearns Knight Suite**

10:25 **Immersive Visualization and Collaboration with LS-PrePost-VR and LS-PrePost-Remote**
Todd J. Furlong, Inv3rsion, LLC, Goffstown, NH

10:50 **VPG Solutions Using MotionView®**
Michael White, Altair Engineering, Troy, MI

11:15 **Rapid Development of Multiple Fold Patterns for Airbag Simulation in LS-DYNA Using Oasys Primer**
Miles Thornton, Arup, UK, England

11:40 **Fast New Methodology for Regulatory Test Simulation**
Velayudham Ganesan, ESI Group

12:05 **Application and Correlation of a Virtual Proving Ground Simulation for a Minivan**
Ulrich Stuhec, NAC Design Verification Department, Ford Motor Company, Dearborn, MI

10:25 a.m.   Session 16 -- Computing/Code Technology (2)   **Pierce Arrow Suite**

10:25 **Improved LS-DYNA Performance on Sun Servers**
Youn-Seo Roh, Sun Microsystems, Inc.

10:50 **Benefits of Scalable Server with Global Addressable Memory for Crash Simulation**
Christian Tanasescu, SGI Inc.

11:15 **A Mesh-free Analysis of Shell Structures**
C. T. Wu, Livermore Software Technology Corporation, Livermore, CA

12:30 p.m.   **Lunch – *"Sponsored by Microsoft"***   **Dearborn Ballroom**

1:30 p.m.   Common Session -- Computing Infrastructure   Springwells Ballroom

    Cray
    HP
    Intel
    IBM
    Linux Networx
    Microsoft
    NEC
    RackSaver
    SGI

3:45 p.m.   Keynote Presentation   Springwells Ballroom

John O. Hallquist, President, LSTC   *"LS-DYNA Development"*

Thank you for your participation in the 8th International LS-DYNA Users Conference!

May 5th & 6th Post-Conference Training Seminars
(Seminars are conducted at the University of Michigan, Dearborn)

Advanced Crashworthiness	*Paul A. Du Bois*
Heat Transfer Analysis	*Arthur Shapiro, Ph.D.*
Implicit Analysis	*Bradley Maker, Ph.D.*
LS-OPT	*Nielen Stander, Ph.D.*
LS-PREPOST	*Philip Ho*
Metal Forming	*Xinhai Zhu, Ph.D.*