

*Welcome to the*  
**13<sup>th</sup> International LS-DYNA<sup>®</sup> Users Conference 2014**



June 8 - 10, 2014  
Hyatt Regency Dearborn  
Dearborn, Michigan USA

Thank you for your participation. This year's Conference Program includes:

- More than 125 technical presentations; additional papers included in the Conference Proceedings
- Plenary and Keynote Addresses by:

**Dr. Thomas J.R. Hughes**, *Professor of Aerospace Engineering and Engineering Mechanics, Computational and Applied Mathematics Chair III, Institute for Computational Engineering and Sciences (ICES), The University of Texas at Austin*

**Dr. David J. Benson**, *Professor of Structural Engineering, Jacobs School of Engineering, University of California, San Diego*

**Mr. Randy Frank**, *Ford Motor Company*

**Dr. Tayeb Zeguer**, *Jaguar Land Rover Limited*

**Dr. Z. Cedric Xia**, *Ford Motor Company*

**Dr. Grant Cook**, *Livermore Software Technology Corporation*

- Exhibition Featuring State-of-the-Art Hardware and Software
- Presentation by **Dr. John O. Hallquist**, President, LSTC

Included in your conference packet with this Conference Agenda are the Technical Session Locator with Map, our Sponsor Appreciation page, Exhibition Area Layout and a general Hotel Map.

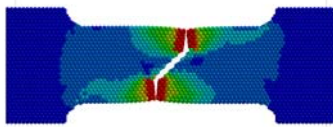
Please take the time to visit the conference sponsors and the many other companies in the Exhibit Area.

Remember to fill out your Drawing Entry Form and have it stamped by each Exhibitor. All completely filled entries will be eligible for the Conference Drawing, held on Tuesday afternoon.

If you have any questions regarding the conference, members of our staff will be available to assist you at the Registration Desk. The Registration Desk will also act as a Lost and Found.

Please wear your **Conference Badge** at all times. This will help us and the hotel staff to better recognize and serve you.

*We hope you enjoy the conference!*



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## Sunday, June 8<sup>th</sup>

9:00 a.m. – 5:00 p.m.	Using LS-DYNA <sup>®</sup> for Heat Transfer & Coupled Thermal Stress Problems ( <i>Art Shapiro</i> )	Regency Ballroom H
4:00 p.m. – 5:00 p.m.	New Features in LS-PrePost <sup>®</sup> ( <i>Philip Ho</i> )	Regency Ballroom A-B
5:00 p.m. – 8:00 p.m.	Registration <i>Sponsored by 3DXCITE, Christie Digital Systems, and NVIDIA</i>	Regency J
5:00 p.m. – 8:00 p.m.	Exhibition	Great Lakes Center
6:00 p.m. – 8:00 p.m.	Welcome Reception <i>Sponsored by FEA Information and d3VIEW</i>	Great Lakes Center

### Exhibitor Information

Company Name	Booth	Web Address
3DXCITE <i>with</i> Christie Digital Systems <i>and</i> NVIDIA	404	www.3ds.com <i>with</i> www.christiedigital.com <i>and</i> www.nvidia.com
ANSYS Inc.	207	www.ansys.com
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Computational Engineering International (CEI)	105	www.ensight.com
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Engineering Technology Associates, Inc.	100	www.eta.com
ESI North America	305	www.esi-group.com
e-Xstream Engineering	205	www.e-Xstream.com
FEA Information Inc. <i>and</i> 3dVIEW	401	www.feainformation.com
GOMPUTE	104	www.gompute.com
Humanetics	102	www.humaneticsatd.com
IBM	309	www.ibm.com
Intel	300	www.intel.com
JSOL Corporation	107	www.jsol.co.jp
LSTC <i>and</i> DYNAmore GmbH	400	www.lstc.com <i>and</i> www.dynamore.de
Mellanox Technologies	303	www.mellanox.com
Microway	208	www.microway.com
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MSC Software	203	www.mscsoftware.com
Penguin Computing Inc.	402	www.penguincomputing.com
Red Cedar Technology	302	www.redcedartech.com
Predictive Engineering	301	www.predictiveengineering.com
Rescale Inc.	304	www.rescale.com
SGI	204	www.sgi.com
Total CAE	206	www.totalcae.com

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## Monday, June 9<sup>th</sup>

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7:30 a.m. – 4:00 p.m.	<b>Registration</b>	<i>Sponsored by 3DXCITE</i>	<b>Regency J</b>
7:30 a.m. – 6:00 p.m.	<b>Cyber Café</b>	<i>Sponsored by Christie and NVIDIA</i>	<b>Great Lakes Center</b>
7:30 a.m. – 8:20 a.m.	<b>Continental Breakfast</b>		<b>Great Lakes Center</b>
8:00 a.m. – 6:00 p.m.	<b>Exhibition</b>		<b>Great Lakes Center</b>
8:20 a.m.	<b>Welcome and Opening Remarks</b>		<b>Great Lakes Center</b>

### 8:35 a.m. Plenary Presentations Great Lakes Center

#### Session Chair: John O. Hallquist (LSTC)

8:35	<b>Professor Thomas J.R. Hughes</b> <i>Professor of Aerospace Engineering and Engineering Mechanics Computational and Applied Mathematics Chair III Institute for Computational Engineering and Sciences (ICES) The University of Texas at Austin</i>	<i>"Isogeometric Analysis: Where we are, and Where we are going"</i>
9:15	<b>Professor David Benson</b> <i>Professor of Structural Engineering Jacobs School of Engineering University of California, San Diego</i>	<i>"Isogeometric Analysis in LS-DYNA<sup>®</sup>"</i>

### 9:55 a.m. Coffee Break – Sponsored by Red Cedar Technology Great Lakes Center

10:05	<b>Mr. Randy Frank</b> <i>Ford Motor Company</i>	<i>"CAE Simulation Trends, Challenges and Opportunities"</i>
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### 11:05 a.m. Keynote Presentation Regency Ballroom A-B

11:05	<b>Dr. Tayeb Zeguer</b> <i>Jaguar Land Rover Limited</i>	<i>"Upfront Concept Design"</i>
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### 11:05 a.m. Keynote Presentation Regency Ballroom C-D

11:05	<b>Dr. Z. Cedric Xia</b> <i>Technical Leader, Global Materials CAE Research &amp; Innovation Center Ford Motor Company</i>	<i>"Integrated Computational Materials Engineering (ICME) for Automotive Applications"</i>
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### 11:05 a.m. Keynote Presentation Regency Ballroom E-F

11:05	<b>Dr. Grant Cook</b> <i>Livermore Software Technology Corporation</i>	<i>"Multi-physics Modeling Using LS-DYNA's CESE, ICFD, and EM solvers"</i>
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### 11:45 a.m. Lunch – Sponsored by Arup Great Lakes Center

**1:00 p.m. Session 1 – Aerospace (1)**

**Desoto Ballroom**

**Session Chair: Thomas J. Vasko (Central Connecticut State University)**

- 1:00 *Li, L., Livermore Software Technology Corporation*  
**Introduction of Rotor Dynamics Using Implicit Method in LS-DYNA®**
- 1:25 *Gilat, A., The Ohio State University*  
**Development of Dynamic Punch test with DIC for Verification of Simulations with MAT224**
- 1:50 *Carney, K. S., NASA Glenn Research Center*  
**New Representation of Bearings in LS-DYNA®**
- 2:15 *Blankenhorn, G., Livermore Software Technology Corporation*  
**LS-DYNA® HYBRID Studies using the LS-DYNA® Aerospace Working Group Generic Fan Rig Model**

**1:00 p.m. Session 2 – Fluid Structure Interaction (1)**

**Marquis Ballroom**

**Session Chair: Mohammad Usman (Ford Motor Company)**

- 1:00 *Zhang, Z-C, Livermore Software Technology Corporation*  
**New Features of CE/SE Compressible Fluid Solver in LS-DYNA®**
- 1:25 *Im, K-S., Livermore Software Technology Corporation*  
**Modeling of Automotive Airbag Inflators using Chemistry Solver in LS-DYNA®**
- 1:50 *Tokura, S., Tokura Simulation Research Corporation*  
**Comparison of Particle Methods : SPH and MPS**
- 2:15 *Nakae, Y., Toyota Motor Corporation*  
**Analysis of Unsteady Aerodynamics of a Car Model in Dynamic Pitching Motion Using LS-DYNA® R7**
- 2:40 *Lin, C-H., General Motors Corporation*  
**Evaluation of LS-DYNA® Corpuscular Particle Method for Side Impact Airbag Deployment Applications**

**1:00 p.m. Session 3 – Automotive (1)**

**Stearns Knight Suite**

**Session Chair: Ye-Chen Pan (General Motors Corporation)**

- 1:00 *Feng, B., Jaguar Land Rover*  
**CAE Applications for Balanced Curtain Airbag Design Meeting FMVSS226 and System / Component Performance**
- 1:25 *El Fadl, B., Ford Motor Company*  
**LS-DYNA® Performance in Side Impact Simulations with 100M Element Models**
- 1:50 *Chen, Y., Ford Motor Company*  
**Meso-Scale FEA Modeling to Simulate Crack Initiation and Propagation in Boron Steel**
- 2:15 *Zhu, H., ArcelorMittal Global R&D*  
**Fracture Prediction and Correlation of AISi Hot Stamped Steels with Different Models in LS-DYNA®**
- 2:40 *Marzougui, D., George Mason University*  
**Development & Validation of a Finite Element Model for a Mid-Sized Passenger Sedan**

**1:00 p.m. Session 4 – Constitutive Modeling (1)**

**Stanley Steamer Suite**

**Session Chair: Ala Tabiei (LS-DYNA Consultant)**

- 1:00 *Kim, H., Memorial University of Newfoundland*  
**Simulation of Compressive 'Cone-Shaped' Ice Specimen Experiments using LS-DYNA®**
- 1:25 *Tan, S., Ministry of Home Affairs, Singapore*  
**Verification of Concrete Material Models for MM-ALE Simulations**
- 1:50 *Schwer, L., Schwer Engineering & Consulting Services*  
**Modeling Rebar: The Forgotten Sister in Reinforced Concrete Modeling**
- 2:15 *Tsoupis, I., Friedrich-Alexander-Universität Erlangen-Nürnberg*  
**A New Way for the Adaption of Inverse Identified GTN-Parameters to Bending Processes**
- 2:40 *Han, Z., Livermore Software Technology Corporation*  
**An Enhanced Bond Model for Discrete Element Method for Heterogeneous Materials**

**1:00 p.m. Session 5 – Simulation (1)**

**Regency A-B**

**Session Chair: Ligong Pan (Ford Motor Company)**

- 1:00 *Cui, Z., Livermore Software Technology Corporation*  
**Sound Radiation Analysis of a Tire with LS-DYNA®**
- 1:25 *Huang, Y., Livermore Software Technology Corporation*  
**ATV and MATV techniques for BEM acoustics in LS-DYNA®**
- 1:50 *Bae, M-G., THEME Engineering*  
**Benchmark of Frequency Domain Methods for Composite Materials with Damage using LS-DYNA®**
- 2:15 *Huang, Y., Arup*  
**Numerical Investigation of Landslide Mobility and Debris-Resistant Flexible Barrier with LS-DYNA®**
- 2:40 *Huang, Y., Livermore Software Technology Corporation*  
**Application of LS-DYNA® for Auto NVH Problems**

**3:25 p.m. Session 6 – Simulation (2)**

**Regency C-D**

**Session Chair: Trevor Dutton (Dutton Simulation Ltd.)**

- 1:00 *Hamid, M.S., Advanced Computational Systems, LLC*  
**Mild Traumatic Brain Injury-Mitigating Football Helmet Design Evaluation**
- 1:25 *Sherwood, J. A., University of Massachusetts*  
**Batted-Ball Performance of a Composite Softball Bat as a Function of Ball Type**
- 1:50 *Nevins, D., Washington State University*  
**Methods for Modeling Solid Sports Ball Impacts**
- 2:15 *Sherwood, J. A., University of Massachusetts*  
**Breaking Bad(ly) - Investigation of the Durability of Wood Bats in Major League Baseball using LS-DYNA®**

3:05 p.m. Coffee Break – Sponsored by Gompute Great Lakes Center

3:25 p.m. Session 7 – Aerospace (2) Desoto Ballroom

**Session Chair: John D. Reid (University of Nebraska-Lincoln)**

3:25 Jackson, K.D., NASA Langley Research Center

**Simulating the Impact Response of Composite Airframe Components**

3:50 Fasanella, E., National Institute of Aerospace

**Simulating the Impact Response of Full-Scale Composite Airframe Structures**

4:15 Goldberg, R. K., NASA Glenn Research Center

**Theoretical Development of an Orthotropic Elasto-Plastic Generalized Composite Material Model**

4:40 Hoffarth, C., Arizona State University

**Verification and Validation of a Three-Dimensional Generalized Composite Material Model**

3:25 p.m. Session 8 – Fluid Structure Interaction (2) Marquis Ballroom

**Session Chair: Wenyu Lian (General Motors Corporation)**

3:25 Schommer, D., Institut für Verbundwerkstoffe GmbH

**Advanced Simulation of Polymer Composite SMC Compression Molding using Fluid-Structure Interaction in LS-DYNA<sup>®</sup>**

3:50 Chen, H., Livermore Software Technology Corporation

**LS-DYNA<sup>®</sup> ALE/FSI Recent Developments**

4:15 Xu, J., Livermore Software Technology Corporation

**Interaction Methods for the SPH Parts (Multiphase Flows, Solid Bodies) in LS-DYNA<sup>®</sup>**

4:40 Peng, S., Livermore Software Technology Corporation

**A New Heat Transfer Capability Between CPM Gas and Its Surroundings**

5:05 Guo, Y., Livermore Software Technology Corporation

**An Introduction to the LS-DYNA<sup>®</sup> Smoothed Particle Galerkin Method for Severe Deformation and Failure Analyses in Solids**

3:25 p.m. Session 9 – Automotive (2) Stearns Knight Suite

**Session Chair: Tau Tyan (Ford Motor Company)**

3:25 Reichert, R., George Mason University

**Methodologies and Examples for Efficient Short and Long Duration Integrated Occupant-Vehicle Crash Simulation**

3:50 Ishiyama, N., Toyota Motor Corporation

**Development of Researched Moving Deformable Barrier (RMDB) FE model for Oblique Crash Test**

4:15 Abu-Odeh, A., Texas A&M Transportation Institute

**Advances in Simulating Corrugated Beam Barriers under Vehicular Impact**

4:40 *Kulak, R., RFK Engineering Mechanics Consultants LLC*  
**On Rollover Simulations of a Full-sized Sedan**

5:05 *Stühmeyer, A., CADFEM GmbH*  
**Crash Simulation of KTM “X-BOW” Car Front Impact Structure**

5:30 *Marzougui, D., George Mason University*  
**Crash Test & Simulation Comparisons of a Pickup Truck & a Small Car Oblique Impacts Into a Concrete Barrier**

**3:25 p.m. Session 10 – Optimization**

**Pierce Arrow Suite**

**Session Chair: Ren-Jye Yang (Ford Motor Company)**

3:25 *Lu, H., Shanghai Hengstar Technology Co. Ltd.*  
**Optimization Design of Bonnet Inner Based on Pedestrian Head Protection and Stiffness Requirements**

3:50 *Lee, J-K., THEME Engineering, Inc.*  
**The Optimization of Servo Press Method for Sheet Metal Forming**

4:15 *Stander, N., Livermore Software Technology Corporation*  
**LS-OPT<sup>®</sup>: New Developments and Outlook**

4:40 *Roux, W., Livermore Software Technology Corporation*  
**LS-TaSC<sup>®</sup> Product Status**

5:05 *Adduri, P., Vanderplaats Research and Development, Inc.*  
**Car Body Optimization Considering Crashworthiness, NVH and Static Responses**

5:30 *Witowski, K., DYNAmore GmbH*  
**Topology and Topometry Optimization of Crash Applications with the Equivalent Static Load Method**

**3:25 p.m. Session 11 – Constitutive Modeling (2)**

**Stanley Steamer Suite**

**Session Chair: Yijung Chen (Ford Motor Company)**

3:25 *Maillot, T., DynaS+*  
**Comparative Study of Material Laws Available in LS-DYNA<sup>®</sup> to Improve the Modeling of Balsa Wood**

3:50 *Croop, B., Matereality*  
**Software for Creating LS-DYNA<sup>®</sup> Material Model Parameters from Test Data**

4:15 *Haufe, A., DYNAmore GmbH*  
**On the Prediction of Material Failure in LS-DYNA<sup>®</sup>: A Comparison Between GISSMO and DIEM**

4:40 *Karajan, N., DYNAmore GmbH*  
**On the Parameter Estimation for the Discrete-Element Method in LS-DYNA<sup>®</sup>**

5:05 *Primavera, V., EnginSoft SpA*  
**Calibration of Material Models for the Numerical Simulation of Aluminium Foams – MAT 154 for M-PORE Foams @ 3 Loads**

5:30 *Effinger, V., DYNAmore GmbH*  
**Nonlinear Viscoelastic Modeling for Foams**



**3:25 p.m. Session 12 – Simulation (3)**

**Regency A-B**

**Session Chair: Sukhi Bilkhu (Mahindra & Mahindra)**

3:25 *Marchaud, G., AREVA TN*

**Designing a Radioactive Material Storage Cask Against Airplane Crashes With LS-DYNA<sup>®</sup>**

3:50 *Zhao, W., Westinghouse Electric Company LLC*

**Modeling Nuclear Fuel Rod Drop with LS-DYNA<sup>®</sup>**

4:15 *Zhu, Y-H., Arup*

**Validation of Hydraulic Gas Damper Coupler and Crash Simulation of Large Rolling Stock Model in LS-DYNA<sup>®</sup>**

4:40 *Rubin, E., RAFAEL Advanced Defense Systems Ltd.*

**Preload Release in a Steel Band under Dynamic Loading**

5:05 *Jørgensen, K. C., NIRAS A/S*

**Modeling of Armour-piercing Projectile Perforation of Thick Aluminium Plates**

5:30 *Schill, M., DYNAmore Nordic AB*

**Simulation of Residual Deformation from a Forming and Welding Process using LS-DYNA<sup>®</sup>**

**3:25 p.m. Session 13 – Computing Technologies (1)**

**Regency C-D**

**Session Chair: Alex Akkerman (Ford Motor Company)**

3:25 *Lin, Y-Y., Hewlett-Packard Company*

**Accelerating Implicit LS-DYNA<sup>®</sup> with GPU**

3:50 *Loewe, B., Panasas, Inc.*

**Scalability of Implicit LS-DYNA<sup>®</sup> Simulations Using the Panasas<sup>®</sup> PanFS<sup>®</sup> Parallel File System**

4:15 *Grimes, R., Livermore Software Technology Corporation*

**New Ordering Method for Implicit Mechanics and What It Means for Large Implicit Simulations**

4:40 *Jeong, S. H., 10DR KOREA Co., Ltd.*

**MME-Converter and MME-Report for LS-DYNA<sup>®</sup> Users**

5:05 *Ichinose, N., JSOL Corporation*

**JSD - Introduction of Integrated Seat Design System for LS-DYNA<sup>®</sup>**

5:30 *Barsotti, M., Protection Engineering Consultants*

**AutoMesher for LS-DYNA Vehicle Modeling**

**6:30 p.m. – 9:00 p.m.**

**Conference Banquet – Sponsored by LSTC and DYNAmore**

**Great Lakes Center**

**Entertainment – Sponsored by LSTC**

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**Tuesday, June 10<sup>th</sup>**

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7:30 a.m. – 8:20 a.m.	<b>Continental Breakfast</b>	<b>Great Lakes Center</b>
7:30 a.m.	<b>Registration &amp; Cyber Café</b>	<b>Great Lakes Center</b>
8:00 a.m. – 5:00 p.m.	<b>Exhibition</b>	<b>Great Lakes Center</b>

**8:25 a.m.      Session 14 – Blast (1)      Desoto Ballroom**

**Session Chair: Isheng Yeh (LSTC)**

- 8:25 *Teng, H., Livermore Software Technology Corporation*  
**Particle Blast Method (PBM) for the Simulation of Blast Loading**
- 8:50 *Nejad Ensan, M., National Research Council, Ottawa*  
**Three Dimensional Analysis of Induced Detonation of Cased Explosive**
- 9:15 *Marrs, F., Georgia Tech Research Institute*  
**Soil Modeling for Mine Blast Simulation**
- 9:40 *Hilding, D., DYNAmore Nordic AB*  
**Validation of the Simulation Methodology for a Mobile Explosive Containment Vessel**

**8:25 a.m.      Session 15 – Fluid Structure Interaction (3)      Marquis Ballroom**

**Session Chair: Chris Galbraith (Metal Forming Analysis Corporation)**

- 8:25 *Hu, W., Livermore Software Technology Corporation*  
**An Adaptive Meshfree Galerkin Method for the Three-dimensional Thermo-mechanical Flow Simulation of Friction Stir Welding Process**
- 8:50 *Del Pin, F., Livermore Software Technology Corporation*  
**LS-DYNA<sup>®</sup> R7 : Free Surface and Multi-phase Analysis for Incompressible Flows**
- 9:15 *Çaldichoury, I., Livermore Software Technology Corporation*  
**LS-DYNA<sup>®</sup> R7: The ICFD Solver for Conjugate Heating Applications**
- 9:40 *Souli, M., University of Lille*  
**Numerical Investigation of Phase Change and Cavitation Effects in Nuclear Power Plant Pipes**

**8:25 a.m.      Session 16 – Occupant Safety (1)      Stearns Knight Suite**

**Session Chair: Stephan Kang (Ford Motor Company)**

- 8:25 *Lou, K., ArmorWorks*  
**Simulation of Various LSTC Dummy Models to Correlate Drop Test Results**
- 8:50 *Cowlam, L., Arup*  
**H-Point Machine and Head Restraint Measurement Device Positioning Tools and Validation**
- 9:15 *Hayashi, S., JSOL Corporation*  
**Simulation-Based Airbag Folding System JFOLD Version 2: New Capabilities and Folding Examples**
- 9:40 *Cheng, M., Med-Eng Holdings, LLC*  
**Evaluation of ATD Models for Simulating Occupant Responses under Vertical Impact**

8:25 a.m. Session 17 – Metal Forming (1)

Pierce Arrow Suite

Session Chair: Yang Hu (Chrysler Group LLC)

8:25 Zhang, C., Livermore Software Technology Corporation  
**Introduction of Die System Module in LS-PrePost<sup>®</sup>**

8:50 Dutton, T., Dutton Simulation Ltd.  
**Manufacturing the London 2012 Olympic Torch**

9:15 Zhang, L., Livermore Software Technology Corporation  
**Advances in LS-DYNA<sup>®</sup> Metal Forming (I)**

9:40 Zhu, X., Livermore Software Technology Corporation  
**Advances in LS-DYNA<sup>®</sup> Metal Forming (II)**

8:25 a.m. Session 18 – Constitutive Modeling (3)

Stanley Steamer Suite

Session Chair: Tayeb Zeguer (Jaguar Land Rover Limited)

8:25 Feng, W. W., Livermore Software Technology Corporation  
**Determining the Material Constants for Mullins Effect in Rubber - Part One: Uniaxial**

8:50 Sockalingam, S., University of Delaware  
**Inelastic Transversely Isotropic Constitutive Model for High Performance Polymer Fibers**

9:15 Takekoshi, K., TERRABYTE Co., Ltd.  
**A Study on Preparation of Failure Parameters for Ductile Polymers**

9:40 Anderson, D., Veryst Engineering, LLC  
**High Strain Rate Testing and Modeling of Polymers for Impact Simulations**

8:25 a.m. Session 19 – Simulation (4)

Regency A-B

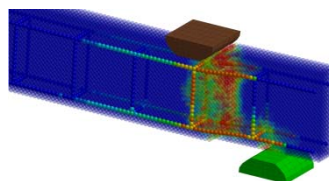
Session Chair: Uli Franz (DYNAmore GmbH)

8:25 Lilja, M., DYNAmore Nordic AB  
**Benchmark of LS-DYNA<sup>®</sup> for Off-shore Applications according to DNV Recommended Practice C208**

8:50 Stelzmann, U., CADFEM GmbH  
**Crash and Impact Simulation of Composite Structures by using CAE Process Chain**

9:15 Foss, P. H., General Motors Global Research and Development  
**Prediction of the Drop Impact Performance of a Glass Reinforced Nylon Oil Pan**

9:40 Kuhlmann, H., DuPont  
**Application and CAE Simulation of Over Molded Short and Continuous Fiber Thermoplastic Composite**



**8:25 a.m. Session 20 – Computing Technologies (2)**

**Regency E-H**

**Session Chair: Tim Palmer (MSC Software)**

8:25 *Yamada, S., Fujitsu Limited*

**Improving Performance of LS-DYNA<sup>®</sup> Crash Simulation with Large Deformation by Modifying Domain Decomposition**

8:50 *Fraser, K., University of Quebec at Chicoutimi*

**Adaptive Smoothed Particle Hydrodynamics Neighbor Search Algorithm for Large Plastic Deformation Computational Solid Mechanics**

9:15 *Grimes, R., Livermore Software Technology Corporation*

**Modal Dynamics in LS-DYNA<sup>®</sup>**

9:40 *Zhu, T., Cray Inc.*

**LS-DYNA<sup>®</sup> Scalability Analysis on Cray Supercomputers**

**10:05 a.m. Coffee Break – Sponsored by Penguin Computing**

**Great Lakes Center**

**10:25 a.m. Session 21 – Blast (2)**

**Desoto Ballroom**

**Session Chair: Nimet Sever (ArcelorMittal)**

10:25 *Kalra, A., Wayne State University*

**Key Parameters in Blast Modeling Using 2D to 3D ALE Mapping Technique**

10:50 *Makwana, R., DEP-Autoline Inc.*

**Comparison of the Brain Response to Blast Exposure Between a Human Head Model and a Blast Headform Model Using Finite Element Methods**

11:15 *Wu, Y., Karagozian & Case*

**Validation Studies for Concrete Constitutive Models with Blast Test Data**

CD only *Bojanowski, C., Argonne National Laboratory (Authors unable to attend conference)*

**Response of a Large Span Stay Cable Bridge to Blast Loading**

CD only *Raz, H., Plasan Ltd. (Author unable to attend conference)*

**PC3: Crash and Blast Analysis Post-Processor for Simulations and Live Tests**

**10:25 a.m. Session 22 – Electromagnetic**

**Marquis Ballroom**

**Session Chair: Lay Knoerr, ArcelorMittal**

10:25 *Lawson, W., General Atomics Electromagnetics*

**A Simple Weak-Field Coupling Benchmark Test of the Electromagnetic-Thermal-Structural Solution Capabilities of LS-DYNA<sup>®</sup> Using Parallel Current Wires**

10:50 *L'Eplattenier, P., Livermore Software Technology Corporation*

**Coupling of the EM Solver with Mechanical and Thermal Shell Elements**

11:15 *Kim, H., Edison Welding Institute*

**Numerical Simulations to Investigate the Efficiency of Joint Designs for the Electro-Magnetic Welding (EMW) of the Ring-shaft Assembly**

11:40 *L'Eplattenier, P., Livermore Software Technology Corporation*  
**Further Advances in Simulating the Processing of Composite Materials by Electromagnetic Induction**

**10:25 a.m. Session 23 – Occupant Safety (2)**

**Stearns Knight Suite**

**Session Chair: Russ Morris (Autoliv)**

10:25 *Brannberg, N., Qoros Automotive Co., Ltd.*

**Development of Pedestrian Protection for the Qoros 3 Sedan**

10:50 *Stahlschmidt, S., DYNAmore GmbH*

**Update in Dummy Model Enhancements and Effective Pre-processing**

11:15 *Untaroiu, C. D., Virginia Tech*

**A Finite Element Model of THOR Mod Kit Dummy for Aerospace Impact Applications**

11:40 *Shah, C. S., Humanetics Innovative Solutions*

**Newly Developed LS-DYNA<sup>®</sup> Models for the THOR-M and Harmonized HIII 50th Crash Test Dummies**

CD only *Lin, M-P., Hua-chuang Automobile Information TEchnical Center (HAITEC) (Author unable to attend conference)*  
**Usage of LSTC\_NCAC Hybrid III 50th Dummy in Frontal Occupant Simulation**

**10:25 a.m. Session 24 – Metal Forming (2)**

**Pierce Arrow Suite**

**Session Chair: Evangelos Liasi (Ford Motor Company)**

10:25 *Mamutov, V., St. Petersburg State Polytechnical University*

**Simulation of High-Voltage Discharge Channel in Waterat Electro-Hydraulic Forming Using LS-DYNA<sup>®</sup>**

10:50 *Ramanna, R., ESI North America*

**CAE Workflow Coupling Stamping and Impact Simulations**

11:15 *Boll, B., DYNAmore GmbH*

**Coupled Simulation of the Fluid Flow and Conjugate Heat Transfer in Press Hardening Processes**

11:40 *Du, C., Chrysler Group LLC*

**The Simulation and Formability Prediction of a DP600 Steel Reverse Draw - NUMISHEET 2014 – Benchmark I**

**10:25 a.m. Session 25 – Constitutive Modeling (4)**

**Stanley Steamer Suite**

**Session Chair: Khaled Shahwan (Chrysler Group LLC)**

10:25 *Shor, O., The University of British Columbia*

**Through-Thickness Element Splitting for Simulation of Delamination in Laminated Composite Materials**

10:50 *Haque, B. Z., University of Delaware*

**Rate Dependent Progressive Composite Damage Modeling using MAT162 in LS-DYNA<sup>®</sup>**

- 11:15 *Shi, D., Michigan State University*  
**Implementation of a New Continuum Damage Mechanics Model for Composites in LS-DYNA<sup>®</sup>**
- 11:40 *Sherwood, J. A., University of Massachusetts*  
**Using LS-DYNA<sup>®</sup> to Simulate the Thermoforming of Woven-Fabric Reinforced Composites**
- 12:05 *Muflahi, S. A., University of Bristol*  
**Investigation of Delamination Modeling Capabilities for Thin Composite Structures in LS-DYNA<sup>®</sup>**

**8:25 a.m.      Session 26 – Simulation (5) and Constitutive Modeling (5)      Regency A-B**

**Session Chair: Chin-Hsu Lin (General Motors Corporation)**

- 10:25 *Borrvall, T., DYNAmore Nordic AB*  
**Current Status of Subcycling and Multiscale Simulations in LS-DYNA<sup>®</sup>**
- 10:50 *Steininger, V., Tiwa Quest AG*  
**Springback Calculation of Automotive Sheet Metal Sub-assemblies**
- 11:15 *Opiela, K. S.; George Mason University*  
**Assessing Options for Improving Roadside Barrier Crashworthiness**
- 11:40 *Dulka, J. M., elmore engineering services, inc*  
**Analysis and Design of a Unique Security Bollard Installment Using LS-DYNA<sup>®</sup> for a K12 Vehicle Impact**
- 12:05 *Smith, A., Honda R & D Americas Inc.*  
**Accuracy Issues in the Simulation of Quasi-Static Experiments for the Purpose of Mesh Regularization**

**10:25 a.m.      Session 27 – Computing Technologies (3)      Regency E-H**

**Session Chair: M. Sahul Hamid (Advanced Computational Systems, LLC)**

- 10:25 *Lui, P., Mellanox Technologies, Inc.*  
**Maximizing Cluster Utilization for LS-DYNA<sup>®</sup> Using 100Gb/s InfiniBand**
- 10:50 *Schreiber, O., SGI*  
**Increasing LS-DYNA<sup>®</sup> Productivity on SGI Systems: A Step-by-Step Approach**
- 11:15 *Jensen, A., Predictive Engineering*  
**Improving the Precision of Discrete Element Simulations through Calibration Models**
- 11:40 *Bala, S., Livermore Software Technology Corporation*  
**LS-DYNA<sup>®</sup> Big Data Processing, Mining and Visualization using d3VIEW**
- 12:05 *Lapoujade, V., DynaS+*  
**Advanced MPP Decomposition of a SPH Model<sup>®</sup>**

**12:30 p.m.      Lunch – Sponsored by BETA CAE Systems      Great Lakes Center**

**1:45 p.m. Technical Session -- Technology Today Great Lakes Center**

- 1:45 3DXCITE ~ Christie Digital Systems ~ NVIDIA
- 1:55 Engineering Technology Associates, Inc. (ETA)
- 2:05 d3VIEW<sup>®</sup>
- 2:15 Arup
- 2:25 Beta CAE Systems S.A.
- 2:35 Red Cedar Technology
- 2:45 Gcompute
- 2:45 Penguin Computing
- 3:05 Intel

**3:00 p.m. Coffee Break – Sponsored by Intel Great Lakes Center**

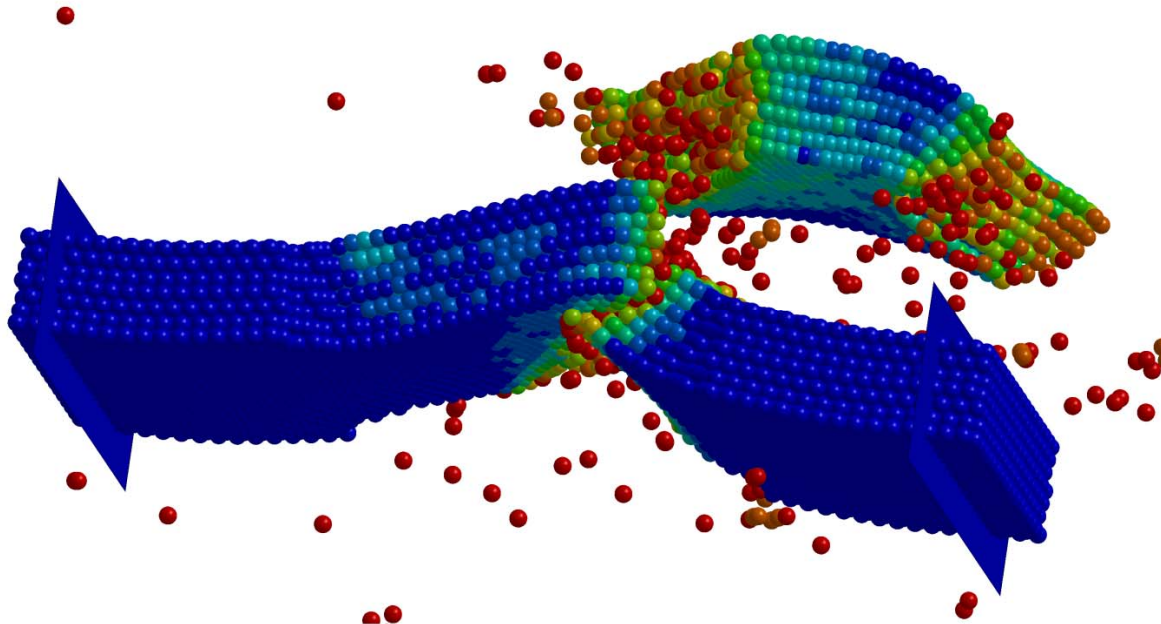
**3:15 p.m. Conference Prize Drawing Great Lakes Center**

**3:30 p.m. Plenary Presentation Great Lakes Center**

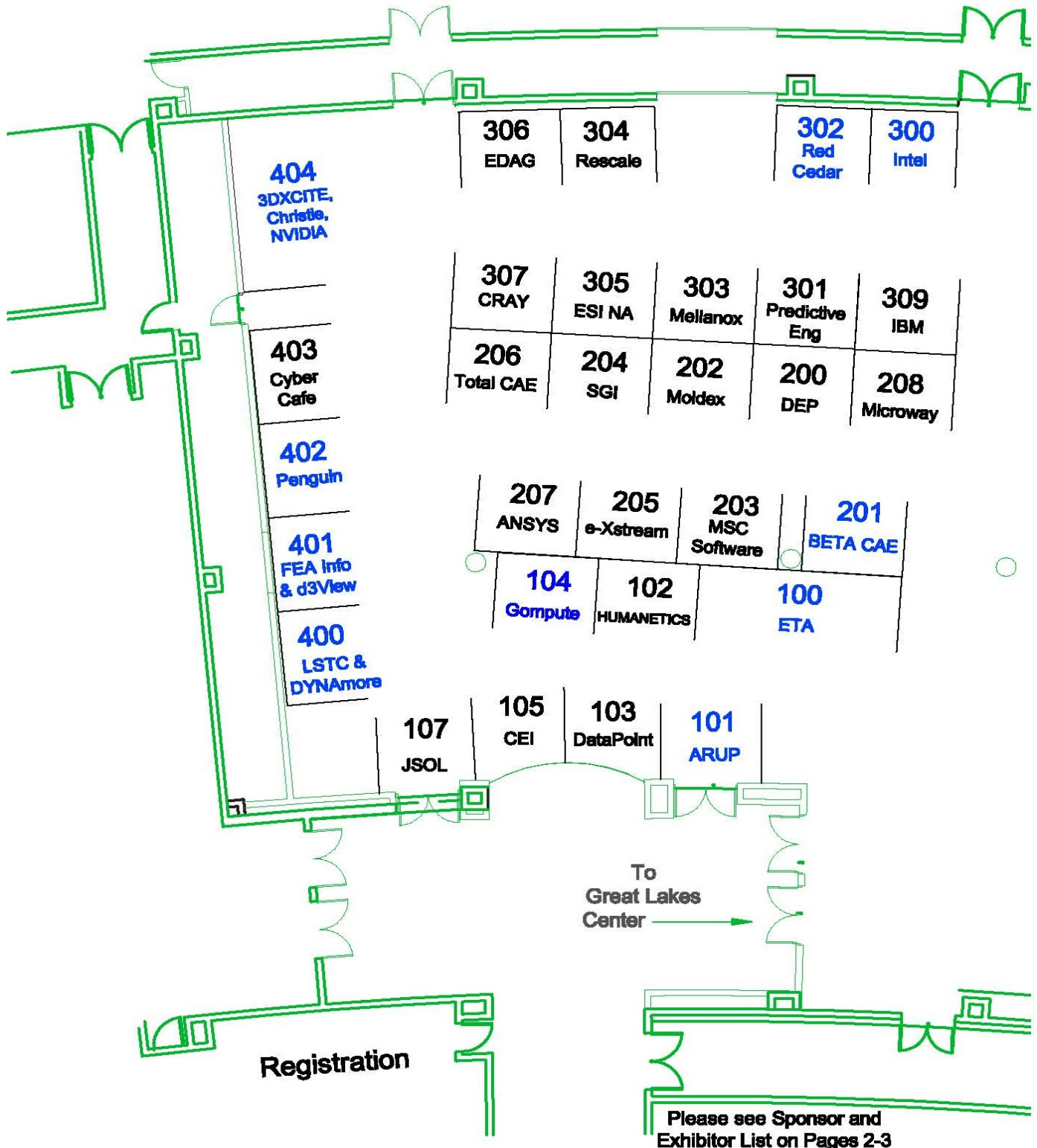
**John O. Hallquist**  
*President, LSTC*

*“LS-DYNA Status & Development Plan”*

**Closing Remarks**



# 2014 LS-DYNA Users Conference Adoba Hotel - Dearborn, MI June 8-10, 2014



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