APRIL
2008

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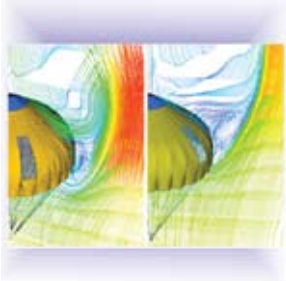
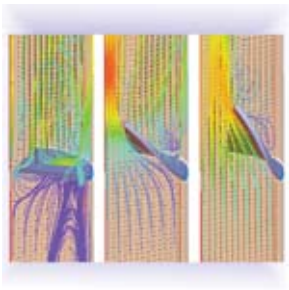
The 10th International LS-DYNA® Users Conference

June 8-10, 2008

Dearborn, Michigan USA





Register Now!!

www.ls-dynaconferences.com

FEA Information Announcements

LSTC's 10th Int'l LS-DYNA® Users Conference

Registration Form can be located toward the end of the the FEA News.
www.ls-dynaconferences.com

Conference attendees are additionally invited to sign up for a complimentary seminar. Follow this URL http://sgi.market2lead.com/go/sgi/ICR to sign up for a complimentary seminar sponsored by LSTC, SGI and Intel on reducing the complexity of design, deployment and management of high performance computational clusters through the Intel® Cluster Ready program. The seminar will be held on Sunday, June 8th from 10AM to Noon at the Hyatt Regency in Dearborn, MI

New LS-OPT® Support Site

A new LS-OPT support site is established with useful information that covers examples, theory and many download materials.

"H-III Dummy Model" mailing list

You will receive all LSTC's new H-III Dummy Releases and Updates.
If you would like to be on the H-III Dummy mailing list contact Sarba
sarba@lstc.com

Sincerely,

Art Shapiro, Editor - art@feainformation.com
Anthony Giaccana, Business Manager – agiac99@aol.com
Wayne Mindle, Graphics – wlm@lstc.com
Trent Eggleston, Consultant/Systems Admin - feaanswer@aol.com

Table of Contents –January 2008

ALYOTECH TECHNOLOGIES

CRIL, LSTC's major distributor in France is now renamed ALYOTECH TECHNOLOGIES. Historically, Nima EDJTEMAI, Directeur d'Agence, has played a major role in introducing LS-DYNA into many industries in France, such as automotive, manufacturing, government, aerospace and educational institutions. LSTC and ALYOTECH TECHNOLOGIES invite industries in France to contact ALYOTECH for their LS-DYNA software sales, consulting, benchmark requirements.

LS-DYNA Distributor Profile:

Name : ALYOTECH TECHNOLOGIES
Web site : http://www.alyotech.fr/index.php?id=235
Contact : Nima Edjtemai nima.edjtemai@alyotech.fr
ALYOTECH TECHNOLOGIES distributes LS-DYNA, LS-OPT and LS-PrePost, as well as other software, such as:

- ANSYS
- ANSYS/EMAG
- ANSYS/CFX
- DYNAFORM
- PRIMER
- VPG

For a complete listing of their products visit ALYOTECH

ALYOTECH TECHNOLOGIES - *société du groupe ALYOTECH FRANCE*
Immeuble Avenir
18 rue Grange Dame Rose
BP 259 - F-78147 Vélizy Cedex
Port. : +33 (0)6 86 08 59 58
Tél : +33 (0)1 30 67 23 44
Fax : +33 (0)1 30 67 23 96

LS-PrePost® Update 2008

www.lstc.com/lspp/content/news.shtml

LS-PrePost is an advanced pre and post-processor that is delivered free with LS-DYNA. The user interface is designed to be both efficient and intuitive. LS-PrePost runs on Windows, Linux, and Unix utilizing OpenGL graphics to achieve fast rendering and XY plotting.

March 19th

Added visualization of *AIRBAG_REFERENCE_GEOMETRY on Page D

March 18th

Updated the Trace Interface to make use of the General Selection panel

March 12th

Updated the Toggle Menu with a more intuitive "check" system

February 29th

Added coincident node pricking and made node/element picking significantly faster and easier.

January 23rd

Added Split Solid option to the ElEdit Interface to allow splitting of hex and penta elements

January 1st

Started working on LS-PrePost 2.3
Version 2.2 will be updated with bug fixes.
New features will be added to 2.3

LS-DYNA® Support Site

http://www.lsoptsupport.com/

The LS-DYNA Support site is open to assist you. In the coming months it will be expanded to cover LS-OPT features and support. The LS-DYNA support site is a collaboration between LSTC and DYNAmore.

LS-OPT, the graphical optimization tool that interfaces perfectly with LS-DYNA LS-OPT allows the user to structure the design process, explore the design space and compute optimal designs according to specified constraints and objectives. The program is also highly suited to the solution of system identification problems.

LS-OPT, the graphical optimization tool that interfaces perfectly with LS-DYNA, allows the user to structure the design process, explore the design space and compute optimal designs according to specified constraints and objectives. The program is also highly suited to the solution of system identification problems and stochatic analysis.

The graphical tool LS-OPTui interfaces with LS-DYNA and provides an environment to specify optimization input, monitor and control parallel simulations and post-process optimization data as well as viewing multiple designs using LS-PREPOST.

d3VIEW Tracking developments in LS-DYNA and d3VIEW
Published

by Suri Bala: d3VIEW is a web-based tool that extracts information from LS-DYNA generated "d3hsp" files and presents it in a concise, user-friendly format. The tool was developed as a hobby project to ease the review of user provided input and result files in a concise and efficient manner.

Updates **d3VIEW SITE**

April 6th Curve Offset in LS-DYNA
LS-DYNA offers ability to offset a defined curve. This helps us to for example to define an arbitrary fire time for airbags by simply changing the offset value rather than to change the entire curve.

April 2nd

Initially in Contact – TIEBREAK contacts

March 31st

New LS-OPT Support Site
A new LS-OPT support site is established with lots of useful information that covers examples, theory and many download materials.

TOP CRUNCH Participant Submissions – March 2008

www.topcrunch.org

SGI / APPLICATIONS ENGINEERING

VENDOR/SUBMITTER -

March 31st through April 8th

Computer/Interconect	Processor	#Nodes x #Processors per Node x #Cores Per Processor = Total #CPU	Time (Sec)	Benchmark Problem
Altix XE1200/Windows CCS/Voltaire Infiniband DDR	Intel Xeon 5160 DC 3.0GHz (Woodcrest)	2 x 2 x 2 = **8**	1647	neon_refined_revised
Altix XE1200/Windows CCS/Voltaire Infiniband DDR	Intel Xeon 5160 DC 3.0GHz (Woodcrest)	4 x 2 x 2 = **16**	1001	neon_refined_revised
Altix XE1200/Windows CCS/Voltaire Infiniband DDR	Intel Xeon 5160 DC 3.0GHz (Woodcrest)	1 x 2 x 2 = **4**	3070	neon_refined_revised
Altix XE1200/Windows CCS/Voltaire Infiniband DDR	Intel Xeon 5160 DC 3.0GHz (Woodcrest)	1 x 1 x 2 = **2**	4757	neon_refined_revised
Altix XE1200/Windows CCS/Voltaire Infiniband DDR	Intel Xeon 5160 DC 3.0GHz (Woodcrest)	1 x 1 x 1 = **1**	8729	neon_refined_revised
Altix ICE8200EX/Mellanox ConnectX IB HCA DDR Fabric OFED v1.3	Intel Xeon E5472 3.00GHz	1 x 2 x 4 = **8**	1462	neon_refined_revised
Altix ICE8200EX/Mellanox ConnectX IB HCA DDR Fabric OFED v1.3	Intel Xeon E5472 3.00GHz	32 x 2 x 4 = **256**	90	neon_refined_revised
Altix ICE8200EX/Mellanox ConnectX IB HCA DDR Fabric OFED v1.3	Intel Xeon E5472 3.00GHz	16 x 2 x 4 = **128**	121	neon_refined_revised
Altix ICE8200EX/Mellanox ConnectX IB HCA DDR Fabric OFED v1.3	Intel Xeon E5472 3.00GHz	8 x 2 x 4 = **64**	230	neon_refined_revised
Altix ICE8200EX/Mellanox ConnectX IB HCA DDR Fabric OFED v1.3	Intel Xeon E5472 3.00GHz	4 x 2 x 4 = **32**	433	neon_refined_revised

TOP CRUNCH Participant Submissions – Page 2

www.topcrunch.org

SGI / APPLICATIONS ENGINEERING

VENDOR/SUBMITTER -

March 31st through April 8th

Altix ICE8200EX/Mellanox ConnectX IB HCA DDR Fabric OFED v1.3	Intel Xeon E5472 3.00GHz	128 x 2 x 4 = **1024**	568	3 Vehicle Collision
Altix ICE8200EX/Mellanox ConnectX IB HCA DDR Fabric OFED v1.3	Intel Xeon E5472 3.00GHz	64 x 2 x 4 = **512**	640	3 Vehicle Collision
Altix ICE8200EX/Mellanox ConnectX IB HCA DDR Fabric OFED v1.3	Intel Xeon E5472 3.00GHz	2 x 2 x 4 = **16**	807	neon_refined_revised
Altix ICE8200EX/Mellanox ConnectX IB HCA DDR Fabric OFED v1.3	Intel Xeon E5472 3.00GHz	32 x 2 x 4 = **256**	948	3 Vehicle Collision
Altix ICE8200EX/Mellanox ConnectX IB HCA DDR Fabric OFED v1.3	Intel Xeon E5472 3.00GHz	16 x 2 x 4 = **128**	1729	3 Vehicle Collision
Altix ICE8200EX/Mellanox ConnectX IB HCA DDR Fabric OFED v1.3	Intel Xeon E5472 3.00GHz	8 x 2 x 4 = **64**	3076	3 Vehicle Collision
Altix ICE8200EX/Mellanox ConnectX IB HCA DDR Fabric OFED v1.3	Intel Xeon E5472 3.00GHz	4 x 2 x 4 = **32**	5589	3 Vehicle Collision
Altix ICE8200EX/Mellanox ConnectX IB HCA DDR Fabric OFED v1.3	Intel Xeon E5472 3.00GHz	2 x 2 x 4 = **16**	11292	3 Vehicle Collision
Altix ICE8200EX/Mellanox ConnectX IB HCA DDR Fabric OFED v1.3	Intel Xeon E5472 3.00GHz	1 x 2 x 4 = **8**	21667	3 Vehicle Collision

April Featured Paper US ARMY Research Laboratory

Structural Design and Analysis of Hit-To-Kill Projectile

Author:
Michael M. Chen, Ph.D
Aerodynamics Branch
Weapons and Materials Research Directorate
U.S. Army Research Laboratory
Aberdeen Proving Ground, MD 21005-5066

ABSTRACT:

This paper introduces the very first step on the development of a guided ammunition system. It presents high level physics based simulations of a guided 60-mm projectile system, which intention is to enable the sub-projectile to hit and kill an incoming hostile missile at an extended range within a very limited time frame. The projectile requires a very high muzzle exit velocity in order to carry out the mission. Due to high inertial loads derived from immense breech pressure, understanding the survivability of the projectile system during launch becomes very important. The structural system of interest includes sub-projectile body, sabot, penetrator and electronics. This study focuses on overall projectile system configuration design and addresses the concern of structural integrity among components due to propellant forces. LS-DYNA, a popular transient dynamics finite element program, will be adopted to perform in-bore dynamic analysis.

The topology of the projectile was initiated based on gun barrel specifications and certain aerodynamics characteristics. Preliminary structural design of sabot and sub-projectile was then performed with pseudo-static analysis. Subsequently, a 3-D finite element model was created and validated by LS-DYNA explicit dynamic analysis. A characteristic centerline variation gun barrel was also taken into account in the study. From simulation results, the muzzle velocity reached only 85% of target value due to 25% overweight of the launch package. However, the projectile system shall survive according to effective stress responses. No material failure is anticipated through in-bore travel. It should be noted that the structural configuration is not optimal as far as the launch package mass is concerned. In the next development phase, rigorous optimization efforts will be made on the projectile system, particularly sabot component.

Shell Formulations

Comments regarding these notes can be directed to jday@lstc.com

The following discussion is within the context of explicit analysis.

In terms of speed and robustness I would rank shell formulations as follows:

1. type 2

2. type 2 with BWC warping stiffness and full projection (see BWC and PROJ in *CONTROL_SHELL)

3. type 10

4. type 16 (Type 16 shells require approximately 2.5 times more CPU than type 2 shells.)

5. type 7

6. type 6 [1]

Robustness:

'Robustness' is meant here as an ability to remain stable under adverse conditions such as poor element shapes and large deformation/distortion. Choices 2 and 3 above are, as you might expect, close to a tie in terms of performance and speed. The last 3 formulations listed above are fully-integrated (4 in-plane integration points) and thus do not suffer from hourglass modes [2]. Generally speaking, the underintegrated elements tend to be a little too soft. By using stiffness-based hourglass control (HG type 4) and a reduced hourglass coefficient (say, .03 to .05), the behavior is stiffened slightly and so this hourglass combination is generally recommended for most applications of the underintegrated shells. For very high velocity/rate problems, viscosity-based hourglass control is recommended.

Accuracy:

From an accuracy standpoint, shell type 16 is preferred over the underintegrated formulations provided the following are true:
- initial element shape is reasonable
- element does not distort unreasonably during the simulation
- Used together with hourglass control type 8, the type 16 shell will give the correct solution for warped geometries.

[1] Formulation 6 with IRNXX set to -2 in *CONTROL_SHELL, while expensive, has been observed to give accurate springback response subsequent to a transient simulation involving large rotations, e.g., spinning blade. Also, this formulation is able to represent a tapered (nonuniform) thickness in the element.

[2] Formulation 16 uses a Bathe-Dvorkin transverse shear treatment which eliminates w-mode hourglassing. Other modes of hourglassing are eliminated in the formulation 16 shell by virtue of the selective reduced (S/R) integration. The S/R integration here means that full itegration (4 in-plane integration points) is used except for purposes of calculating transverse shear. To eliminate transverse shear locking, only 1 in-plane integration point is considered in calculating transverse shear. For certain composite materials, laminate shell theory can be invoked by setting

LAMSHT=1 in *CONTROL_SHELL. This option removes the usual assumption of uniform shear strain through the thickness of the shell -- this is important for sandwich composites with soft cores.

Miscellaneous:

NFAIL1 and NFAIL4 in *CONTROL_SHELL can be invoked to automatically delete highly distorted shells (negative jacobians) before they lead to an overall instability.

When ESORT=1, all triangular shells which are not assigned a triangular element formulation by the user, e.g., ELFORM 3, will automatically take on the C0 formulation (ELFORM 4). Triangular shells assigned ELFORM 16 will automatically become ELFORM 4 regardless of the value of ESORT.

It is generally recommended that invarient node numbering be invoked by setting INN=2 or 4 in *CONTROL_ACCURACY. This is especially important when the material is orthotropic.

REFERENCES LS-DYNA Theory Manual 2006:

- Section 7 in the 2006 Edition of the Theory Manual addresses formulation 2.
- Shell formulation 16 is discussed in Section 9 of the Theory Manual.
- Section 10 addresses formulation 1 with Section 10.6 extending the discussion to formulations 6 and 7.
- Laminate shell theory (LAMSHT in *CONTROL_SHELL) is discussed in Section 11 of the Theory Manual.

Participant LS-DYNA® Resource Page (alpha order)

Fully QA'd by Livermore Software Technology Corporation

SMP and MPP Hardware and OS

FUJITSU

FUJITSU Prime Power	SUN OS 5.8
FUJITSU VPP	Unix_System_V

HP

HP PA-8X00	HP-UX 11.11. and above
HP IA-64	HP-UX 11.22 and above
HP Opteron	Linux CP4000/XC
HP Alpha	True 64

IBM

IBM 4/5	AIX 5.1, 5.2 5.3
IBM Power 5	SUSE 9.0

INTEL

INTEL IA32	Linux, Windows
INTEL IA64	Linux
INTEL Xeon EMT64	Linux, Windows 64

NEC

NEX SX6	Super-UX

SGI

SGI Mips	IRIX 6.5X
SGI IA64	SUSE 9 w/Propack 4 Red Hat w/ Propak 3

SUN

SUN Sparc	5.8 and above
SUN Opteron	5.8 and above

Participant LS-DYNA® Resource Page (alpha order)

Fully QA'd by Livermore Software Technology Corporation

MPP and Interconnect MPI

FUJITSU

	O/S	HPC Interconnect	MPI Software
FUJITSU Prime Power	SUN OS 5.8		
FUJITSU VPP	Unix_System_V		

HP

	O/S	HPC Interconnect	MPI Software
HP PA8000	HPUX		
HPIA64	HPUX		
HP Alpha	True 64		

IBM

	O/S	HPC Interconnect	MPI Software
IBM Power 4/5	AIX 5,1, 5.2, 5.3		
IBM Power 5	SUSE 9.0		LAM/MPI

INTEL

	O/S	HPC Interconnect	MPI Software
INTEL IA32	Linux, Windows	InfiniBand (Voltaire), MyriCom	LAM/MPI, MPICH, HP MPI, SCALI
INTEL IA64	Linux		LAM/MPI, MPICH, HP MPI
INTEL Xeon EMT 64	Linux	InfiniBand(Topspin, Voltaire), MyriCom, PathScale InfiniPath	LAM/NPI, MPICH, HP MPI, INTEL MPI, SCALI

NEC

	O/S	HPC Interconnect	MPI Software
NEX SX6	Super-UX		

SGI

SGI Mips	IRIX 6.5 X	NUMAlink	MPT
SGI IA 64	SUSE 9 w/Propack 4 RedHat w/Propack 3	Numalink, InfiniBand(Voltaire)	MPT, Intel MPI, MPICH

SUN

Sun Sparc	5.8 and above		
Sun Opteron	5.8 and above		LAM/MPI

LS-DYNA® Resource Page - Participant Software

Interfacing or Embedding LS-DYNA - Each software program can interface to all, or a very specific and limited segment of the other software program. The following list are software programs interfacing to or having the LS-DYNA solver embedded within their product. For complete information on the software products visit the corporate website.

ANSYS - ANSYS/LS-DYNA

ANSYS/LS-DYNA

Built upon the successful ANSYS interface, ANSYS/LS-DYNA is an integrated pre and postprocessor for the worlds most respected explicit dynamics solver, LS-DYNA. The combination makes it possible to solve combined explicit/implicit simulations in a very efficient manner, as well as perform extensive coupled simulations in Robust Design by using mature structural, thermal, electromagnetic and CFD technologies.

AI*Environment:

A high end pre and post processor for LS-DYNA, AI*Environment is a powerful tool for advanced modeling of complex structures found in automotive, aerospace, electronic and medical fields. Solid, Shell, Beam, Fluid and Electromagnetic meshing and mesh editing tools are included under a single interface, making AI*Environement highly capable, yet easy to use for advanced modeling needs.

ETA – DYNAFORM

Includes a complete CAD interface capable of importing, modeling and analyzing, any die design. Available for PC, LINUX and UNIX, DYNAFORM couples affordable software with today's high-end, low-cost hardware for a complete and affordable metal forming solution.

ETA – VPG

Streamlined CAE software package provides an event-based simulation solution of nonlinear, dynamic problems. eta/VPG's single software package overcomes the limitations of existing CAE analysis methods. It is designed to analyze the behavior of mechanical and structural systems as simple as linkages, and as complex as full vehicles.

MSC.Software - MSC.Dytran LS-DYNA

Tightly-integrated solution that combines MSC.Dytran's advanced fluid-structure interaction capabilities with LS-DYNA's high-performance structural DMP within a common simulation environment. Innovative explicit nonlinear technology enables extreme, short-duration dynamic events to be simulated for a variety of industrial and commercial applications on UNIX, Linux, and Windows platforms. Joint solution can also be used in conjunction with a full suite of Virtual Product Development tools via a flexible, cost-effective MSC.MasterKey License System.

MSC.Software - MSC.Nastran/SOL 700

The MSC.NastranTM Explicit Nonlinear product module (SOL 700) provides MSC.Nastran users the ability access the explicit nonlinear structural simulation capabilities of the MSC.Dytran LS-DYNA solver using the MSC.Nastran Bulk Data input format. This product module offers unprecedented capabilities to analyze a variety of problems involving short duration, highly dynamic events with severe

geometric and material nonlinearities.

MSC.Nastran

Explicit Nonlinear will allow users to work within one common modeling environment using the same Bulk Data interface. NVH, linear, and nonlinear models can be used for explicit applications such as crash, crush, and drop test simulations. This reduces the time required to build additional models for another analysis programs, lowers risk due to information transfer or translation issues, and eliminates the need for additional software training.

MSC.Software – Gateway for LS-DYNA

Gateway for LS-DYNA provides you with the ability to access basic LS-DYNA simulation capabilities in a fully integrated and generative way. Accessed via a specific Crash workbench on the GPS workspace, the application enhances CATIA V5 to allow finite element analysis models to be output to LS-DYNA and then results to be displayed back in CATIA. Gateway for LS-DYNA supports explicit nonlinear analysis such as crash, drop test, and rigid wall analysis.

Oasys software for LS-DYNA

Oasys software is custom-written for 100% compatibility with LS-DYNA. Oasys PRIMER offers model creation, editing and error removal, together with many specialist functions for rapid generation of error-free models. Oasys also offers post-processing software for in-depth analysis of results and automatic report generation.

EASi-CRASH DYNA

EASi-CRASH DYNA is the first fully integrated environment for crashworthiness and occupant safety simulations with LS-DYNA, and covers the complete CAE-process from model building and dataset preparation to result evaluation and design comparisons.

EASi-CRASH DYNA can be used for concept crash, FE crash and coupled rigid body/FE crash simulations in conjunction with MADYMO.
Full capability to handle IGES, CATIA V4, CATIA V5, UG and NASTRAN files.

APTEK

The MMCD is a graphics-based and menu-driven program that interfaces with the LS-DYNA library of material models and the LS-OPT optimization code. The core of the MMCD is the driver, which calculates the stress-strain behavior of material models driven by combinations of strain increments and stress boundary conditions, i.e. pure shear stress, and combinations of uniaxial, biaxial, and triaxial compression and tension. MMCD input and output is accessed via pre- and post-processors; graphical user interfaces (GUIs) for easily selecting the material model parameters and load histories, and for plotting the output in both two (stress-strain curves) and three (yield surfaces) dimensions. The pre-processor, driver, and post-processor are combined into a web downloadable software package that operates seamlessly as a single code.

FEA Information Participants –
Company name takes you directly to Website

OASYS Ltd: Markets engineering software products. Consulting engineers, planners and project managers working in all areas of the built environment.

JRI Solutions Ltd.: Specializing in Research & Consulting; System Consulting, Frontier Business, System Integration and Science Consulting.

Hewelett Packard: Personal computing, mobile computing, network management, 3-D graphics and information storage.

ANSYS Inc.: Develops, markets, supports and delivers collaborative analysis optimization software tools.

SGI: Silicon Graphics, Inc., is a leader in high-performance computing, visualization, and storage.

MSC.Software: Information technology software and services provider.. Products & services used to enhance & automate the product design/manufacturing process.

NEC: A history of more than 100 years of leadership/innovation in the core high-technology sectors of communications, computers/electronic components

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INTEL: For more than three decades, Intel Corporation has developed technology enabling the computer and Internet revolution that has changed the world.

Engineering Technology Associates, Inc.: Provides engineering & IT services & has created the streamlined simulation software packages DYNAFORM and VPG

ESI Group: A software editor for the numerical simulation of prototype and manufacturing process engineering in applied mechanics.

Microsoft: For customers solving complex computational problems, Microsoft Windows Compute Cluster Server 2003 accelerates time-to-insight.

BETA CAE Systems S.A.: Specialized in the development of state of the art CAE pre- and post-processing software systems.

FEA Information Participants –
Company name takes you directly to Website

SUN Microsystems Inc.: Provides network computing infrastructure solutions that include computer systems, software, storage, and services.

Detroit Engineered Products: A Michigan based engineering consulting and software products firm specializing in the area of Product Development products and solutions.

APTEK: Among the software developed APTEK develops and licenses an interactive program for driving LS-DYNA material models - the Mixed Mode Constitutive Driver (MMCD).

PANSAS: High performing Parallel Storage for scalable Linux clusters. Delivering exceptional scaling in capacity and performance for High Performance Computing (HPC) organizations.

Intelligent Light: A a world leader in the development and delivery of software for computational fluid dynamics (CFD) users. We help the world's best engineering and research organizations maximize the productivity and impact of their CFD capabilities

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LS-DYNA® Software Distributors - Alphabetical order by Country

Australia	Leading Engineering Analysis Providers
Canada	Metal Forming Analysis Corporation
China	Arup
Germany	CAD-FEM
Germany	DynaMore
India	Oasys, Ltd.
India	Cranes Software International Limited (CSIL),
Italy	EnginSoft Spa
Japan	The Japan Research Institute
Japan	ITOCHU Techno-Solutions Corporation
Korea	Korean Simulation Technologies
Korea	Theme Engineering
Netherlands	Infinite Simulations Systems B.V.
Russia	State Unitary Enterprise - STRELA
Sweden	Engineering Research AB
Taiwan	Flotrend Corporation
USA	Engineering Technology Associates, Inc.
USA	Dynamax
USA	Livermore Software Technology Corp.
UK	ARUP

Consulting and Engineering Services

Australia Manly, NSW	Leading Engineering Analysis Providers (LEAP) Greg Horner info@leapaust.com.au 02 8966 7888
Canada Kingston, Ontario	Metal Forming Analysis Corp. - (613) 547-5395 Chris Galbraith galb@mfac.com
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USA Windsor, CA	SE&CS - (707) 837-0559 Len Schwer len@schwer.net
USA Troy, MI	Engineering Technology Associates, Inc: (248) 729-3010
USA Corvallis, OR	Predictive Engineering - (1-800) 345-4671 George Laird george.laird@predictiveengineering.com
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USA Austin, TX	Friedman Research Corporation - (512) 247-2277

Educational & Contributing Participants

Alphabetical Order By Country

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Italy	Professor Gennaro Monacelli	Prode – Elasis & Univ. of Napoli, Frederico II
Russia	Dr. Alexey I. Borovkov	St. Petersburg State Tech. University
USA	Dr. Ted Belytschko	Northwestern University
USA	Dr. David Benson	University of California – San Diego
USA	Dr. Bhavin V. Mehta	Ohio University
USA	Dr. Taylan Altan	The Ohio State U – ERC/NSM
USA	Dr. Ala Tabiei	University of Cincinnati

Informational Websites

The LSTC LS-DYNA Support site: www.dynasupport.com

LS-DYNA Support Site	FEA Informationwebsites
LS-DYNA Examples (more than 100 Examples)	LS-DYNA Conference Site
TopCrunch – Benchmarks	LS-DYNA Publications to Download On Line
LS-DYNA Publications	LSTC LS-PrePost Tutorials
CADFEM GmbH Portal	

For complete Resume contact: Mark Greer mlgreer@msn.com
2516 W. Country Bend Dr, South Jordan, UT 84095 (801) 254-9354

MANAGEMENT: Product Marketing, Business Development, Alliance Marketing, Pre-Sales

PROFILE: Marketing professional with over 15 years of experience directing departments, programs, and projects. Consistent record of achieving dramatic increases in revenue. Expertise in facilitating business growth, directing product development and launches, and supporting corporate sales efforts. Adept at managing effective teams.

Product Marketing • Strategic Planning • Brand Management • Process Improvement
Budget Administration • Pricing • Distribution • Promotions • Problem Solving • Consultative Sales
• Competitive Analysis • Product Positioning • Negotiations • Relationship Management

PROFESSIONAL EXPERIENCE

Linux Networx, Bluffdale, UT 2007 - 2008
Corporate Marketing / MarCOM Manager

Linux Networx, Bluffdale, UT 2004 - 2006
Alliance Marketing Manager
Coordinated partnership marketing efforts at global level and led market research efforts.

- Developed and managed partnerships and joint marketing programs with major software companies to enhance revenue growth by marketing vendor software with Linux O/S supercomputer systems.
- Analyzed partner solution offerings and developed relationships with application vendors to achieve business goals. Investigated and resolved technical issues with partners applications.
- Worked with partners to develop, position, and market value-added solutions for product lines.
- Communicated with field sales to coordinate joint sales efforts and business development opportunities with vendor partners.
- Developed value propositions for product collateral, promotional material, and sales programs.
- Played key role in company's ability to penetrate commercial market with new product offerings**.** Oversaw market research and configuration development for turnkey, desk-side cluster optimized for finite element analysis (FEA) software applications.
- Assisted with creation of reseller agreement used to recruit application partners and resellers.

Novell, Inc., Provo, UT 1999 - 2003
Product Marketing Manager
Managed marketing functions for company's highest-selling products, valued at $45 million.

- Carried out complete project management of products, from initial launch planning through ongoing promotional and marketing efforts.
- Grew Novell Identity Manager (Novell DirXML) from launch to $25 million in sales, exceeding revenue projects by 34% and becoming market leader. Developed messaging, managed analyst relations, and created channel messaging.
- **Increased sales 37%** for Novell eDirectory product, by creating aggressive Internet-based promotional offer [targeting SUN and Microsoft directory users] that quadrupled license revenue and received extensive media attention.
- Prepared training materials, oversaw pricing and packaging, performed staff training, developed collateral and web content, and defined positioning strategies.

Improved brand recognition 32% as measured through outside analysts and customer surveys. Supervised team of six for two major launch initiatives.

Yahoo Group Yammerings

Note: LS-DYNA Yahoo Group is neither owned nor operated by LSTC, and LSTC has no control over the content.

Jim Kennedy
KBS2 Inc.
jmk@kbs2.com

Len Schwer
Schwer Engineering & Consulting Services
Len@Schwer.net

The LS-DYNA Yahoo Group archive contains a wealth of information that can be helpful to any LS-DYNA user. We suggest you review the archives when you are seeking help on any topic related to LS-DYNA. *NOTE: Questions and responses may have been edited for clarity & brevity.*

This installment of "Yahoo Yammerings" features several questions and responses from the past month of postings to the LS-DYNA Yahoo Group:

1. *Preventing Problems Due to NANs.*
2. *Assessing model accuracy/error for mesh convergence?*
3. *LS DYNA treatment of Initial Penetrations?*
4. *SOFT Contact?*

Preventing Problems Due to NANs

In a recent DYNAmore InfoMail, they have offered the following 'TIP' regarding "Preventing Problems Due to NANs:" In In the course of a simulation NaNs "Not a Number" can occur for various reasons. Since Versioon 971-7600.1224, LS-DYNA provides options to prevent such problems via the keyword *CONTROL_SOLUTION with parameter ISNAN=1 or the execution command line: "i=input ... checknan=1"

LS-DYNA will then report nodes where NANs occur first, write a plot state, and terminate the job. The node list can be found in the "messag" file with the text "*** termination due to out-of-range forces."

If you are interested in receiving a copy of the "DYNAmore InfoMail." please send an email to info@dynamore.de

Assessing model accuracy/error for mesh convergence?

I am trying to determine if LS-DYNA has any built in error quantification or estimation tools. Specifically, I am trying to determine the overall accuracy of my model due to discretization-based error. I have looked through the keyword and theory manuals without finding anything helpful.

Some research indicates that checks can be done using methods such as Richardson's extrapolation technique, performing three runs at different discretizations. However, I am interested to know if LS-DYNA tabulates any running error values, for either round-off or for discretization sources. I am looking for something beyond the simple "mesh quality" checking utilities.

Reply by Len Schwer

As the original poster correctly indicated, in most cases three mesh resolutions are required to obtain an *estimate* of the discretization error. The good news is the recent development of the Grid Convergence Index (GCI) provides an estimate when the successive mesh refinements are not integer multiples, i.e. doubling the mesh is not required.

A good reference for GCI is:

ASME Journal of Fluids Engineering Editorial Policy
"Statement on the Control of Numerical Accuracy"
http://journaltool.asme.org/Templates/JFENumAccuracy.pdf

and a very nice overview of discretization error is provided on this NASA web site:

http://www.grc.nasa.gov/WWW/wind/valid/tutorial/spatconv.html

I have been urging people in solid mechanics to estimate their discretization error for quite sometime, so I welcomed this question. Discretization error estimation is *required* to publish numerical results in many CFD journals, including the above cited ASME Fluids Engineering Journal.

The answer to the original question is "No." There are no methods for estimating discretization error in LS-DYNA, nor LS-PrePost.

I believe if more solid mechanics types would estimate their discretization error they would be very surprised at the magnitude of the error in their solution attributable to meshing. Even if your solution agrees with an experiment, there is still discretization error in your solution. So, then the question is what *other* error is present to cancel the discretization error, and how larger is it?

LS DYNA treatment of Initial Penetrations?

Can you provide additional information on the use of the parameter IGNORE on the *CONTACT keyword optional card C? I set IGNORE=1or 2, the manual says that the initial penetrations are tracked. What does this mean? Is there anything printed for these two options, and in that case where?

I have also noticed that there is an IGNORE option in Optional Card 4 for *CONTROL_CONTACT. As I understand it, this overrides all local definitions of IGNORE in the *CONTACT cards. Is this correct?

If I define the *CONTROL_CONTACT card but only include the first 2 cards (rows) I assume that no global IGNORE setting is used. Is this correct?

Reply by Jim Kennedy

I believe that most of your questions have been addressed in Suri Bala's blog and the LS-DYNA support site, which are given here:

http://blog.d3view.com/2006/12/20/initial-penetrations-in-contact-interfaces/
http://www.dynasupport.com/support/faqs/faq_contact/contact.ignore1
http://www.dynasupport.com/support/howto/initial-penetrations

SOFT Contact?

Having read Suri Bala's contact notes, I am looking for some confirmation. If a contact is defined where SOFT=0, the contact stiffness is determined by the contact segment size and the master and slave material properties. The contact surface time step can then be fine tuned by varying the master and slave penalty factors (SFS and SFM). If SOFT=1 or 2, the contact stiffness is determined by the nodal masses and the global time step with the resulting contact stiffness being independent of the material constants. The SOFSCL factor then provides a means to fine tune the penalty stiffness to provide contact stability.

My question is, when SOFT=1 or 2, does this make the SFS and SFM parameters redundant? I seem to remember Paul DuBois stating that it did in one case but not another but that was a long time ago hence the request for clarification.
?

Reply by Jim Kennedy

Perhaps the following, offered by Lee Bindeman and Jim Day, is what you are trying to remember. Those notes are included in a larger discussion at

http://www.dynasupport.com/support/howto/soft-option

LS-DYNA Yahoo Groups

There are over 2570 subscribers from all over the world, and this list seems to grow by a hundred new subscribers ever few months; no small testament to the rapidly growing popularity of LS-DYNA. The group currently averages about 270 messages per month, i.e. about 10 messages per day. You can subscribe to the group by sending an email request to LS-DYNA-subscribe@yahoogroups.com or by visiting the Yahoo Groups web site http://groups.yahoo.com

Generally, the quickest/best responses are to those questions posed with the most specifics. General questions such as "How do I use XXX feature?" either go unanswered, or are answered by Jim Kennedy with links to appropriate references in the growing LS-DYNA related literature, e.g. see the archive of LS-DYNA Conference proceedings at www.dynalook.com

Seminars From carhs.training gmbh

Managing Director: Rainer Hoffmann

www.carhs.de

carhs.training gmbh
Siemensstr. 12
63755 Alzenau
Tel. +49 (0) 6023 964063
trainingcenter@carhs.de
http://www.carhs.de/en

Training Center: Alzenau – A few of the many 2008 classes

Introduction to Passive Safety of Motor Vehicles	Wed, 28 May
Euro NCAP and global Tests for Consumer Protection through Active and Passive Safety	Mon, 23 Jun
Frontal-Restraint Systems according to FMVSS 208 and Euro NCAP	Wed, 25 Jun
Side Impact - Requirements and Development Strategies	Thurs, 01 Jul
International Crash – Rules and Regulations: Current and Future Developments	Thurs, 03 Jul

LSTC Training Classes in California & Michigan

	California	Michigan
Advanced Impact	Aug 5-8	
Advanced Option	June 23-24	Dec 15-16
ALE/Eulerian & FSI		
Blast & Penetration	Aug 18-19	
Composite Materials	June 25-26	
Concrete & Geomaterial Modeling	Sept 25-26	
Contact	Aug 14-15	Sept 16-17
Heat Transfer & Thermal-Stress		
Implicit	Aug 12-13	
Intro to LS-DYNA	May 06-09 July 22-25 Nov 11-14	June 17-20 Sept 09-12 Dec 09-12
Intro to LS-OPT	Sept 09-14	
Material Modeling Using User Defined Options	June 30-July01	
Mesh Free Methods (SPH & EFG)		

Computer Aided Engineering – CAE Journal in China

By: YU jie

NOTES: *Computer Aided Engineering* is one of the most famous CAE journals in China, which is expected to become an industry-oriented magazine under the rapid development of CAE. CAE Technology has been developed for about twenty years in China. Now, the spring of CAE is finally coming. This is an era filled with opportunities and challenges for the Chinese CAE market. It is looking forward to having more enterprises and engineers to deeply use CAE technologies to create value. *Computer Aided Engineering* will be integrated with commercial merit and technical value to assist the development for CAE enterprises and engineers in China.

Brief Introduction

Computer Aided Engineering (quarterly, ISSN 1006-0871) started publication in 1992. It is a compre-hensive journal about the research and application of CAE on Compu-tational Mechanics, Computational Fluid Dynamics, Computational Mathematics, Structural Dynamics and Engineering Management. It covers many CAE industries, such as aviation and aerospace, ships, automobiles, steel, machinery, metallurgy, civil construction, pre-cise foundry casting, electronic chip design, and so on.

The journal is published in Chi-nese and English and has been selected into American Cambridge Scientific Abstracts, Polish Index Copernicus, Chinese Scientific & Technical Paper Citation, Chinese Core Journal (Selected) Database, Wanfang Data, Chinese Journal Net, Chinese Academic Periodicals (CD-Rom ED.). It is expected to be embodied by American Engineering Index.

Recent Activity

Computer Aided Engineering is now in rapid development. Recently, it started a largest activity to pro-mote the research and develop-ment of CAE for enterprises and universities in China. For the activi-ties, it will do a large-scale survey and analysis on market and re-search fields of Chinese CAE, and a large conference will be held to summarize the achievement in Shanghai, China at the year end or early next year.

Your support is appreciated.

Contact Person:

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The "1st International Conference on Hot Sheet Metal Forming of High performance Steel, October 22-24, 2008, Kassel, Germany"

The ongoing demand towards the application of high-performance steel and, beyond that, towards steel parts with tailored properties leads inevitably to a demand for improved metal forming technologies. Among these technologies hot sheet metal forming is gaining increasing importance. The technological reason for that can be seen in the ability not only to improve formability at elevated temperatures but especially in the potential of simultaneous control of complex micro structures during thermo-mechanical processing. This of course involves challenges in terms of tailored properties through optimisation of varying microstructure over the overall part geometry. As the first in a series of international conferences, to be alternatively held in Kassel and in Luleå, will highlight these multiple aspects from a scientific as well as from an industrial viewpoint

Website Conference Invitation - pdf

Conference Secretary Contact Information

Nicolas Saba
University of Kassel
Chair of Metal Forming TechnologyKurt-Wolters-Strasse 3
D-34125 Kassel, Germany
Phone: +49 -(0) 561-804-1976
Fax: +49 -(0) 561-804-2706
e-mail: **saba@uni-kassel.de**

7th German LS-DYNA Forum Sept. 30 – Oct. 1, 2008, Bamberg, Germany

Pictures are Impressions of Bamberg, Germany


The DYNA*more* invites you to contribute to the 7th German LS-DYNA Forum. The conference will be held in the marvellous city of Bamberg, awarded as Unesco world cultural heritage. All users are kindly encouraged to submit a paper on an application of LS-DYNA or LS-OPT. The event will be an ideal forum to share and discuss experiences, to obtain information on upcoming features, and to learn more about new application areas. Additionally, the conference offers information about products related to LS-DYNA and LS-OPT in a comprehensive hardware and software exhibition. We are looking forward welcoming you either as presenter, exhibitor, or attendee.

User Presentations: We kindly encourage all LS-DYNA and LS-OPT users to present a paper. Abstract deadline: 16th May 2008. Please find the call for papers at:
http://www.dynamore.de/forum

Keynote Speakers: The following persons already confirmed their key note presentation:
- Prof. v. Estorff (TU Hamburg/Harburg)
- Dr. Elsäßer (TRW)
- Dr. Frik (Adam Opel GmbH)
- Dr. Hallquist (LSTC)
- Mr. Hog (EDAG)
- Dr. Mlekusch (Audi AG)
- Prof. Roll (Daimler AG)
- Dr. Zhang (Germanischer Lloyd)

Exhibition
The conference will host an exhibition on products related to LS-DYNA and LS-OPT. Details are outlined at:
http://www.dynamore.de/exhibit

Sponsoring
The conference offers various opportunities for Sponsors. We kindly ask to find details at:
http://www.dynamore.de/sponsor

Conference Language
German and English.

Registration and Contact
DYNA*more* GmbH, Miriam Lang
Industriestr. 2, 70565 Stuttgart
Tel. +49 (0) 7 11 - 45 96 00 - 0
Fax +49 (0) 7 11 - 45 96 00 - 29
e-mail: info@dynamore.de

Please find further information at
http://www.dynamore.de

10th International LS-DYNA® Users Conference Dearborn, Michigan, USA June 8-10, 2008 Hosted by LSTC

In this section you will find the latest information – Additionally visit the Official LSTC Conference Site at http://www.ls-dynaconferences.com

Conference Brochure in pdf format

Keynote Speakers

- Mr. Tsuyoshi Yasuki
  General Manager of CAE Research Development and Application
  Toyota Motor Corporation

- Dr. Ted Belytschko
  Walter P. Murphy Professor
  Northwestern University

- Mr. Stephen T. Kozak
  Safety Chief Engineer
  Body Engineering
  North America Engineering
  Ford Motor Company

- Dr. Chuan-Tao Wang
  Chief Die Engineer
  GM Technical Fellow
  Body Manufacturing Engineering
  Die Center
  General Motors Corporation

- Dr. Rahul Gupta
  Army Research Laboratory
  Aberdeen Proving Grounds

- Mr. Paul Du Bois
  Consultant

- Dr. John O. Hallquist
  President, LSTC

Exhibit Hall Hours

Sunday June 08 5:00 p.m – 8:00 p.m.
Monday June 09 8:00 a.m – 6:00 p.m
Tuesday June 10 8:00 a.m – 4:00 p.m

Technical Sessions

Monday June 09 8:30 a.m – 6:00 p.m.
Tuesday June 10 8:30 a.m – 6:00 p.m.

Advanced Crashworthiness
- Mr. Paul Du Bois
Heat Transfer & Hot Stamping
– Dr. Arthur B. Shapiro
Implicit Analysis
– Dr. Ala Tabiei
LS-OPT®
– Dr. Nielen Stander
LS-PrePost®
– Mr. Philip Ho
Metal Forming
– Dr. Xinhai Zhu
ALE
– Dr. M'hamed Souli

Conference Registration

Sunday, June 08 5:00 p.m.– 8:00 p.m.
Monday June 09 7:30 a.m.– 4:00 p.m

Sponsorships (alphabetical order)

Platinum

- IBM - Entertainment
- SGI/INTEL - Banquet
- MICROSOFT - Reception

Gold

- ETA – Conference Padfolio
- HP – Registration/CyberCafe

Silver

- FEA Information – Lunch

Bronze

- Sun – Breakfast

Conference Breaks

- ANSYS
- ARUP
- NEC
- TASS

Exhibitor Booths

- ALTAIR
- AMD
- APTEK
- ANSYS
- ARUP
- BETA CAE
- CEI
- DATAPOINT
- DEPUSA
- ESI
- ETA
- FEA INFORMATION
- FRAUNHOFER SCAI
- FTSS
- HP
- IBM
- INTEL
- JRI
- MELLANOX
- MICROSOFT
- MSCSOFTWARE
- NEC
- PANASAS
- QLOGIC
- SGI
- SUN
- TASS
- XTREME

LS-DYNA® International Users Conference Registration Form

you can register on line at **www.ls-dynaconferences.com**
To use this form you must fax all 3 pages to (925) 961-0886

Conference:
Includes Technical Sessions, Reception, Banquet, Outing, Breakfast & Lunch

Training Seminar - An Optional 2-day short course.

PRINT or TYPE Information if you have any questions contact Marsha@lstc.com

Check all that apply:
_____I am a student with a valid student ID
_____I will be attending the conference seminars
____ I will be taking a training seminar after the conference
____ I am a Presenter
_____I am a Session Chair
_____I am a Keynote Speaker
_____I will be in the booth only for a Sponsor/Exhibitor

Name as you want it to appear on your badge:

_____

Company/University as you want it to appear on your badge:

_____

Dept_____

Address _____

_____

_____

City _____State/Province _____

Zip/Postal Code _____Country_____

Telephone _____Ext _____

Fax _____

E-Mail _____

Options and Pricing

Non Students

Check Option		
	Presenter – staying at the hotel Session Chair Keynote Speakers Booth Only	n/c
	Conference Only	$475.00
	Training Seminar Only	$475.00
	Conference & Training	$950.00

Students with Valid Student ID

Check Option		
	Presenter – Conference Only	n/c
	Conference Only	$275.00
	Training Seminar Only	$275.00
	Conference & Training	$550.00

Training Seminar Choice

Class – June 11-12 from 9am to 5pm - Registration on June 11th at 8am

Check only 1 Option	
	Advanced Crashworthiness
	Heat Transfer & Hot Stamping
	Implicit Analysis
	LS-OPT®
	LS-PrePost®
	Metal Forming
	ALE

Reception – Banquet – Outing

(Not included with Training Seminar Only Registrations)

Reception June 8th at 6pm Sponsored by MICROSOFT

	I will NOT attend
	I will attend
	I will attend & bring a guest

Banquet June 9th at 7pm Sponsored by SGI/INTEL

	I will NOT attend
	I will attend
	I will attend & bring a guest
	Beef - Banquet Food Choice
	Fish - Banquet Food Choice
	Chicken - Banquet Food Choice
	Vegetarian - Banquet Food Choice

Outing June 8th at 6pm Sponsored by MICROSOFT

	I will NOT attend
	I will attend
	I will attend & bring a guest

PAYMENT INFORMATION:

_____ I will pay by Credit Card – please e-mail me the form to return by fax

My e-mail _____

Visa, Amex or Master Card #_____

Expiration Date _____

Amount to charge _____

My phone number _____

_____My company will send a purchase order

If you have any questions, please contact me. I've created this form, if you do not wish to use the on-line registration form. Marsha Victory marsha@lstc.com Upon receipt of your form I will send you a confirming e-mail.

Conference Papers (alphabetical order)

- 18 wheel Truck Dynamic and Durability Analysis Using Virtual Proving Ground
- 2D to 3D ALE Mapping
- A Cyclic Damaged Plasticity Model : Implementation and Applications
- A Finite Element Analysis of Mid-Shaft Femoral Tolerance under Combined Axial Bending Loading
- A Heterogeneous Constitutive Model for Reinforced Carbon-Carbon Using LS-DYNA®
- A Numerical Investigation for Rock Fall Impact Behavior of Pithead of Tunnel with Falling Weight Impact Loading
- A Review of Sixteen Years of LS-DYNA® Application in Stamping Manufacturing Engineering at Chrysler
- A Smoothed-Particle Hydrodynamics (5PH) Model for Machining of 1100 Aluminum
- A Study of Quasi-static problem by SPH Method
- Application of Scrap Shedding Simulation in Stamping Manufacturing
- Assessing the Convergence Properties of NSGA-ll for Direct Crashworthiness Optimization
- Assessment of Automotive Panel to Meet Handling Load Requirements: CAE Simulation
- Automating Oasys PRIMER and Oasys D3PLOT using JavaScript
- Benchmark Study on the AIRBAG_PARTICLE Method for Out-Of-Position Applications

Conference Papers (cont'd)

- Comparison Between Experimental and Numerical Results of Electromagnetic Forming Processes
- Comparison of ALE and SPH Simulations of Vertical Drop Tests of a Composite Fuselage Section into Water
- Comparison of Analytical and Numerical Results in Modal Analysis of Multispan Continuous Beams with LS-DYNA®
- Comparison of Hybrid III Rigid Body Dummy Models
- Concepts to take Elastic Tool Deformation in Sheet Metal Forming into Account
- Coupling FE Software through Adapter Elements : A Novel Use of User-Defined Elements
- Development of an Airbag Landing System for the Orion Crew Module
- Development of Finite Element Models of Restraint System for Injury Analysis in Side Impact
- Direct Multi-Objective Optimization through LS-OPT Using Small Number of Crashworthiness Simulations
- Drop Analysis of Waste Transfer Flask
- Effect of Material Characteristics on Wrinkling During Dome Forming of a Beverage Can Using LS-DYNA®
- FE-Applications in Aircraft Structure Analysis
- Finite Element Modeling of Preloaded Bolt Under Static Three-Point Bending Load
- Finite Element Simulation using SPH Particles as Loading on Typical Light Armored Vehicles
- Gas Dynamic Simulation of Curtain Airbag Deployment through Interior Trims
- High Speed Machining Modeling: SPH Method Capabilities

Conference Papers (cont'd)

- Ideas on Applying Very Fine Models in Dummy Model Development
- Impact Analysis of a Crash-box for Racing Car in Sandwich Material
- Influence of Element Formulation on the Axial Crushing of Thin-walled Dual-phase Steel Square Sections
- Influence of Selection Criterion on the RBF Topology Selection for Crashworthiness Optimization
- Influence of the Coupling Strategy in the Numerical Simulation of Electromagnetic Sheet Metal Forming
- Influence of the Residual Welding Phenomena on the Dynamic Properties of a Two-Meter Long Tube with 64 Non-Symmetrical Brackets Welded on a Helical Path
- Intel® Cluster Ready Support for LS-DYNA®/MPP
- LS-DYNA® Impact Model Build-up : Process Automation with ANSA Data Management and Task Manager
- Metal Forming Applications Using Implicit Mechanics Features in LS-DYNA
- Metamodel Sensitivity to Sampling Strategies: A Crashworthiness Design Study
- Modeling Rebound of Foam Backed Racetrack Barriers
- Modeling Self-Piercing Riveted Joint Failures in Automotive Crash Structures
- Mortar Contact Algorithm for Implicit Stamping Analyses in LS-DYNA®
- Multi-Disciplinary Design Optimization for Occupant Safety : Leveraging your LS-DYNA® Simulations
- Multi-Disciplinary Design Optimization for Occupant Safety: Leveraging Your LS-DYNA® Simulations

Conference Papers (cont'd)

- New Finite Element Model for NHTSA Impact Barrier
- Novel HPC Technologies for Scalable CAE: The Case for Parallel I/O and File Systems
- Novel Multi-scale Modeling of Woven Fabric Composites for use in Impact Studies
- Numerical and Experimental Determination of Strains in the Vicinity of a Centrally Located Circular Discontinuity in AA6061-T6 Square Extrusions During Axial Crushing
- Numerical Simulation and Experimental Study for Magnetic Pulse Welding Process on AA6061-T6 and Cu 101 Sheet
- On Closing the Constitutive Gap Between Forming and Crash Simulation
- Optimization and Sensitivity Analysis of Numerical Simulation of Tubular Hydroforming
- Optimizing LS-DYNA® Productivity in Cluster Environments
- Pelvic Response Investigation of Lateral Loading Conditions Using Finite Element Models
- Ramp Wave Compression in a Copper Strip Line: Comparison Between MHD Numerical Simulations (LS-DYNA®) and Experimental Results (GEPI device)
- Simple Input Concrete Constitutive Models: An Illustration of Brick Wall & Concrete Cylinder Perforation
- Simulation of Ballistic Impact on Composite Panels
- Simulation of Composite Tubes Axial Impact with A Damage Mechanics Based Composite Material Model

Conference Papers (con't'd)

- Simulation of Energy Absorption in Braided Composite Tubes through Axial Crushing
- Simulation of Polymeric Materials in LS-DYNA®
- Simulation of Progressive Deformable Barrier (PDB) Tests
- Soft Soil Impact Testing and Simulation of Aerospace Structures
- Statistics and Non-Linear Sensitivity Analysis with LS-OPT® and D-SPEX
- Structural dynamic response of a track chain complete undercarriage system using virtual proving ground approach
- Studies on Behavior of Carbon and Fiberglass Epoxy Composite Laminates under Low Velocity Impact Loading using LS-DYNA®
- The 3D Adaptive EFG Method for Forging and Extrusion Analysis
- The Effect of Using Rigid ISOFIX on the Injury Potential of Toddlers in Near-side Impact Crashes
- The Influence of Permanent Volumetric Deformation on the Reduction of Load Bearing Capability of Plastic Components
- The Performance of 10-million Elements Car Model by MPP Version of LS-DYNA® on Fujitsu PRIMEPOWER
- The Use of LS-DYNA® Models to Predict Containment of Disk Burst Fragments
- Tippe Top Simulation by LS-DYNA®
- Use of Simpleware Software for LS-DYNA® Analyses
- Using LS-DYNA® from ANSYS Workbench Environment

Conference Papers (con't'd)

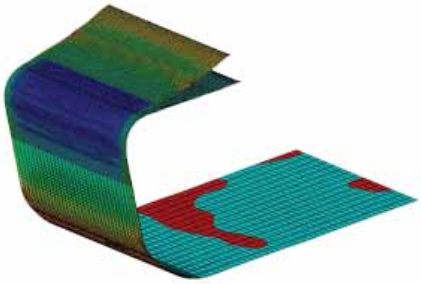
- Validation of Finite Element Crash Test Dummy Models for the Prediction of Orion Crew Member Injuries During a Simulated Vehicle Landing
- Visual DSS CAE Data Management and Decision Support System for Simulation Life Cycle Management
- Visual-Environment integrated Pre and Post Environment for LS-DYNA®
- Visualization of Pareto Optimal Fronts for Multiple Objectives with D-SPEX
- WorldSID Dummy Model Development in Cooperation with German Automotive Industry

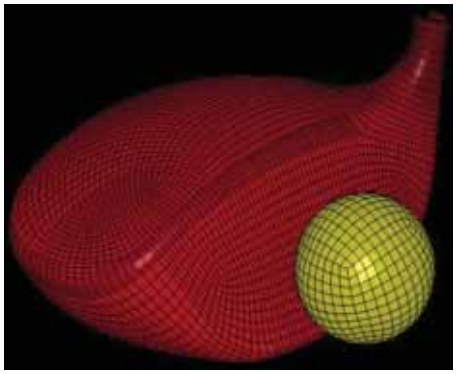
Conference Location

Hyatt Regency Dearborn

Fairlane Town Center
Dearborn, MI 48126
Tel: (313) 593-1234 or (800) 233-1234
www.hyatt.com

The Hyatt Regency Dearborn Hotel is conveniently located in the Fairlane Town Center, situated on the Southfield Freeway (M-39) in Dearborn, Michigan. It is only minutes from historic Greenfield Village, the Henry Ford Museum, the Automotive Hall of Fame and the new downtown Detroit casinos.





Conference Sessions and Schedule

10th International LS-DYNA® Users Conference
June 8-10, 2008
www.ls-dynaconferences.com

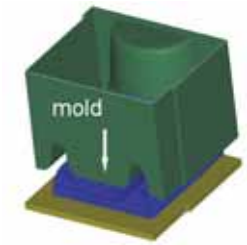


Exhibit Hall

Sunday, June 8 *5:00 p.m. - 8:00 p.m.*
Monday, June 9 *8:00 a.m. - 6:00 p.m.*
Tuesday, June 10 *8:00 a.m. - 4:00 p.m.*

Technical Sessions

Monday, June 9 and Tuesday, June 10, 2008
8:30 a.m. - 6:00 p.m.

The conference program includes technical papers ranging from LS-DYNA applications to its latest features and functions. Presenters from all over the globe will be in attendance.

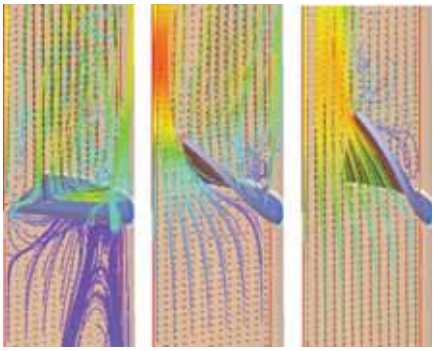
Session Topics Include:

- Blast Loading
- Crashworthiness
- Drop Tests
- Fluid/Structure Interaction
- Hardware Performance
- Impact Analysis
- Manufacturing
- Material Modeling
- Metal Forming
- Metal Stamping
- Occupant Safety
- Optimization
- Visualization

Conference Registration

Sunday, June 8, 2008
Registration 5:00 p.m. - 8:00 p.m.

Monday, June 9, 2008
Registration 7:30 a.m. - 4:00 p.m.



Keynote Speakers

Mr. Tsuyoshi Yasuki
General Manager of CAE Research Development and Application
Toyota Motor Corporation

Dr. Ted Belytschko
Walter P. Murphy Professor
Northwestern University

Mr. Stephen T. Kozak
Safety Chief Engineer, Body Engineering
North America Engineering
Ford Motor Company

Dr. Chuan-Tao Wang
Chief Die Engineer
GM Technical Fellow
Body Manufacturing Engineering
Die Center
General Motors Corporation

Dr. Rahul Gupta
Army Research Laboratory
Aberdeen Proving Ground

Mr. Paul Du Bois
Consultant

Dr. John O. Hallquist
President
LSTC