FINITE ELEMENT ANALYSIS feaINFORMATION.COM

FEA Information Engineering Solutions

Volume 2, Issue 07, July 2013

Among this month's articles

- **Published papers for ADT – Human Body – Occupant Modeling**
- **Visual-Environment for LS-DYNA**
- **Lancemore AVI Update**

FEA Information Inc. is a publishing company founded April 2000, incorporated in the State of California July 2000, and first published October 2000. The initial publication, FEA Information News continues today as FEA Information Engineering Solutions. The publication's aim and scope is to continue publishing technical solutions and information, for the engineering community.

FEA Information Inc. Publishes:

FEA Information Engineering Solutions

FEA Information Engineering Journal

FEA Information China Engineering Solutions

FEA Information Engineering Solutions:

A monthly publication in pdf format sent via e-mail, additionally archived on the website FEA Publications. www.feapublications.com

FEA Information China Engineering Solutions

The first edition was published February 2012. It is published in Simplified and Traditional Chinese in pdf format. Published : February, April, June, August, October, December. The China Solutions is archived on the website FEA Publications. www.feapublications.com
To sign up for the Traditional, or Simplified edition write to yanhua@feainformation.com

FEA Information Engineering Journal: ISSN #2167-1273, first published February, 2012

Available on www.feaiej.com

Platinum Participants

www.beta-cae.gr

www.cray.com

www.datapointlabs.com

www.eta.com

www.esi-group.com

www.gns-mbh.com

http://gridcore.se

www.hengstar.com /

www.jsol.co.jp/english/cae

www.lstc.com

www.oasys-software.com/dyna/en/

kaizenat.com

www.dfe-tech.com

LANCEMORE Co.

www.lancemore.jp/index_en.html

www.cometsolutions.com

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Announcements

LS-DYNA China Conference

I am pleased to announce the China Conference website is www.lsdyna.cn and www.dalianfukun.com/conference . Feel free to contact me regarding th China conference regarding participation or exhibitor. Best Regards, Yanhua yanhua@feainformation.com

Chosen Papers for FEAIEJ, ISSN 2167-1273, Volume 2, Issue 7, July 2013

www.feaiej.com

- Evaluation of a dummy design by using a human body model
- Development of special new versions of the FAT/PDB Dummy models for quick analysis response. The Rapid Analysis Models (R.A.M.).
- The pressure response in the brain during short duration impacts

TERRABYTE Corporation – participating with FEA Information starting August

Consulting for LS-DYNA and other solution products

www.terrabyte.co.jp

Sincerely, Marsha Victory, Trent Eggleston

FEA Information

June 2013 FEA Information Engineering Solutions

07	LS-DYNA R7 Three New Solvers for Multiphysic Purposes
08	US & Int'l LS-DYNA® Users
09	CHINA & Int'l LS-DYNA® Users
10	LS-DYNA Classes Kaizenat – India
11	Review 9th European LS-DYNA Users' Conference
12	Comet Solutions Expands Presence in China Market
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17	CAE Associates ANSYS e-Learning
18	Cray Lustre Storage Solution

July chosen papers to showcase in FEAIEJ are © to:
The 2013 9th European LS-DYNA Users Conference - ARUP

Evaluation of a dummy design by using a human body model

Christian Gehre, Norbert Praxl PDB –
Partnership for Dummy Technology and Biomechanics, Germany
Sebastian Stahlschmidt, Dirk Freßmann
DYNAmore GmbH, Germany

Abstract

Human body models for occupant protection became popular in the last years. They started to turn from high sophisticated research tools to reasonably applicable tools to support some specific areas of occupant safety.

This study is focused on the evaluation of the BioRID-II shoulder design by using the THUMS human body model.

After the introduction of the BioRID-II into several test protocols to assess whiplash associated disorder, some serious concerns about the dummy's performance emerged. Various simulations and tests indicated that the dummy's shoulder design may cause unrealistic loads. Simulation runs with the THUMS in the same test environment were used to verify this assumption. The overall kinematics and therefore the accelerations of human body model and dummy model correlate well. A comparison of forces and moments between both is difficult because of the completely different internal structure of human and dummy. However, in-depth analyses showed that the simple dummy shoulder causes direct neck loads, while a human shoulder distributes the load through clavicles and scapulas to the whole rib cage.

The same artefact was observed at the recently developed model of a female rear impact dummy (EvaRID) that is based on the BioRID-II design. The THUMS was scaled down to the size of the EvaRID by keeping almost same relative differences in size as observed between BioRID-II and THUMS. The dummy artifact could be verified with the downscaled THUMS, too.

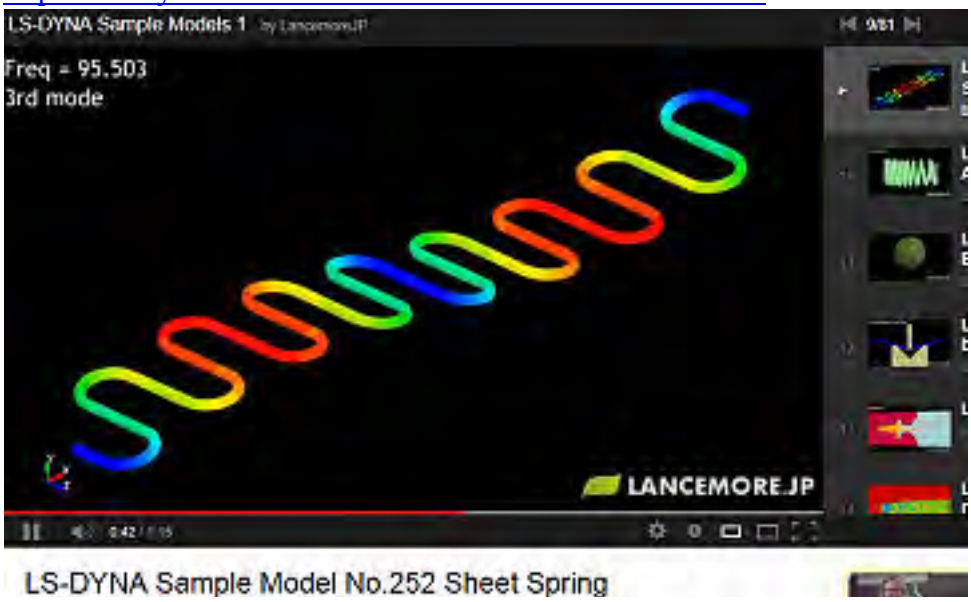
In summary, a human body model is a complex, not easy to handle but helpful tool to evaluate the performance of crash test dummies and to identify dummy related artifacts. While the overall kinematics between dummy and human model are somehow comparable, forces and moments may differ because of the different internal designs of dummy and human body model

July 2013 Chosen FEAIEJ Papers ISSN 2167-1273, Volume 2, Issue 7, July 2013

- Evaluation of a dummy design by using a human body model
- Development of special new versions of the FAT/PDB Dummy models for quick analysis response. The Rapid Analysis Models (R.A.M.).
- The pressure response in the brain during short duration impacts

Papers: The full suite of papers from the conference are now available to download from www.dynalook.com

http://www.youtube.com/user/LancemoreJP?feature=watch



Added to The Models Page on our website www.lancemore.jp

05/July/2013
Sample No.364-365

04/July/2013
Sample No.363

03/July/2013
Sample No.361-

A collection of sample models created through LS-DYNA by Lancemore FEA team.

S-DYNA is useful not only for the nonlinear structural analysis, but also for analyzing FSI (Fluid Structural Interaction) and supporting the implicit method function. It also covers a wide range of fields including particle method, vibration and acoustic analysis, and we are expecting that the range will keep on expanding in the future.

The sample models have been created and collected below for the purposes of letting you know what LS-DYNA can do and demonstrating our knowledge and abilities to create models. We are hoping that our models come in useful for you. If you wish to create a particular model, please contact us. We will offer the best cost-effective solutions. Thank you for your interest in our models!

Contact: info@lancemore.jp

Visual-Environment

Visual-Environment is a flexible and open engineering framework within a common platform, addressing multiple simulation domains and various FE solver. It encompasses the entire Computer-Aided Engineering (CAE) process from interfacing with CAD (Computer-Aided Design) to model set-up and post-processing all using a single core compute model.

For each application, engineers benefit from the comprehensive modeling tool Visual-Mesh to generate solution quality meshes in complex geometries for various CAE domains including Crash, Safety, NVH, Energy, Heat Treatment, Weld, Casting, Flow, Electromagnetism, etc.
Visual-Viewer post-processing tool caters to the requirements of the CAE community through its multi-page/multi-plot environment.

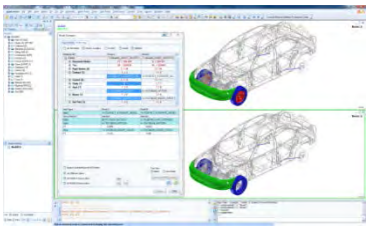
The integrated software development toolkit, Visual-Software Development Toolkit (Visual-SDK), allows users to easily customize and extend this open architecture through process templates and macros.

Visual-Environment incorporates engineering knowledge, best practices, process automation, workflow management and simulation content management into your design process.

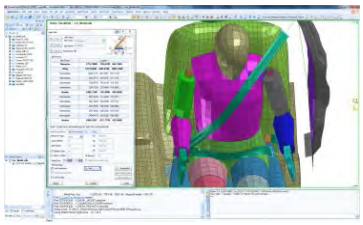
This integrated and versatile virtual prototyping platform improves engineering productivity across multiple CAE domains.

Visual-Environment for LS-DYNA is a comprehensive and industrially proven solution for LS-DYNA analysis. It comprises the solver specific preprocessing application called Visual-Crash DYNA as well as various solver independent applications for meshing, dedicated safety features, post-processing and process automation, namely Visual-Mesh, Visual-Safe, Visual-Viewer and Visual-Process.

Visual-Mesh

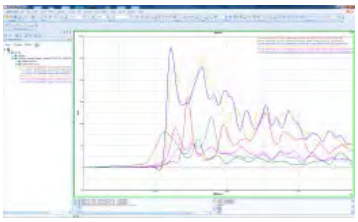


Visual-Crash DYNA

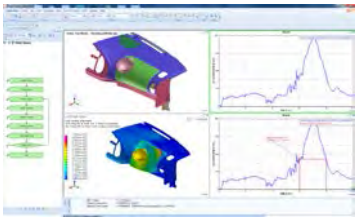


Visual-Safe

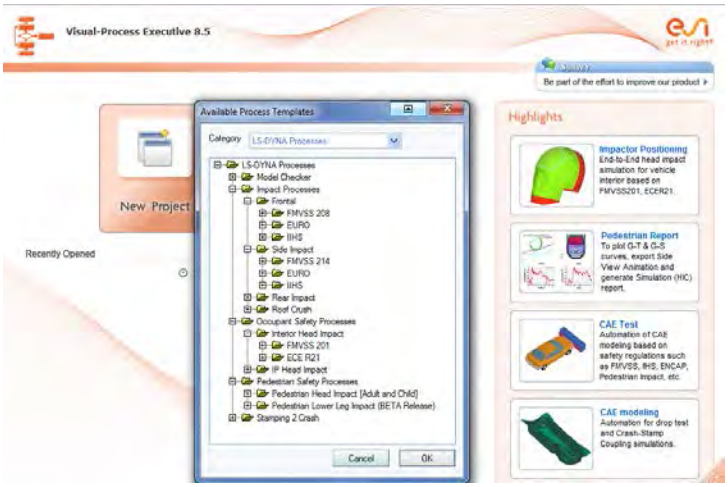
Visual-Viewer



Visual-Viewer



Visual-Process



Visual-Process: generic out-of-the-box templates for various FE solver and loadcases

Russia:

Sukhoi Su-30SM, the latest of the twin-seat SU-30 jet fighters, will be delivered to the Russian Air Force.

Upgraded for performance

- radar and communications capabilities,
- friend-or-foe system,
- ejection seat
- new weapons.
- thrust-vectoring engine nozzles, providing super-maneuverability at low airspeeds.

PARIS AIR SHOW

Bearing a close resemblance to U.S.Aircraft, the China's aircraft fighters, Drone made its showing at the Paris Air Show at Le Bourget airfield

The display of China Military Developments all bore close resemblances to the Lockheed Martin F-16 and General Atomics MQ-1 Predator.

China chose not to display the new J-20 which is China's new classified stealth-fighter..

KOrea Simulation TECHnology Co.,Ltd [Kostech]

http://www.kostech.co.kr

FEA Information Inc. was represented by Marsha Victory. Among the many presentations that were presented were:

Redefining the role of analysis on the vehicle development process
- Hyundai Motor Company Byung-Sik Kang

Structural safety assessment using the Fluid - Structure interaction analysis techniques of LS-DYNA code
- Korea Maritime University Sang-Gap Lee

Status of the international law on Crash Safety field and rating system
- Automotive Test & Research Center Jae-Wan Lee

Recent Development In Inventium
ETA - Arthur Tang

NVH/BSR analysis of Car seats using LS-DYNA 3D
- DAS Sang-Hoon Shin

Thums Ver4 and its application
- J-SOL Kimihiro Hayashi

Recent Development In LS-DYNA
- LSTC J.O Hallquist

Mr.Pravin Gurav & Mr. Nanda Kumar joins Kaizenat Technologies Pvt. Ltd.

We are pleased to announce that Mr. Pravin Gurav has joined us as Manager for West & North India & Mr. Nanda Kumar has joined our Technical Support team as Sr. Application Engineer.

Pravin comes with rich experience of technical sales & customer management for past 7 years. Prior to joining Kaizenat he has worked with ANSYS & EDS. He will be based in Pune & responsible for the customers in West & North India on techno commercial role. His primary focus will be on support delivery aspects for increased customer satisfaction

Nanda has 3 years of experience supporting various customers all over India in LS-Dyna and ANSA. He has been as a great trainer based on consistent great feedback from customers

The Kaizenat team now has 9 members, focusing on LS-DYNA:

- 6 on our technical team
- 3 on our non-technical team

For any queries on LS-DYNA, please contact support@kaizenat.com

Among the published papers for ADT – Human Body – Occupant Modeling – Additional papers will be listed in August.

An automated belt fitting tool for 6 and 10 year-old child crash dummies

http://www.dynalook.com/9th-european-ls-dyna-conference/an-automated-belt-fitting-tool-for-6-and-10-year-old-child-crash-dummies

Gillian Mara, Christian Dalton (Semcon)

Modelling child occupant safety through computer aided engineering (CAE) within a vehicle is an area that is constantly developing

Evaluation of a dummy design by using a human body model

http://www.dynalook.com/9th-european-ls-dyna-conference/evaluation-of-a-dummy-design-by-using-a-human-body-model

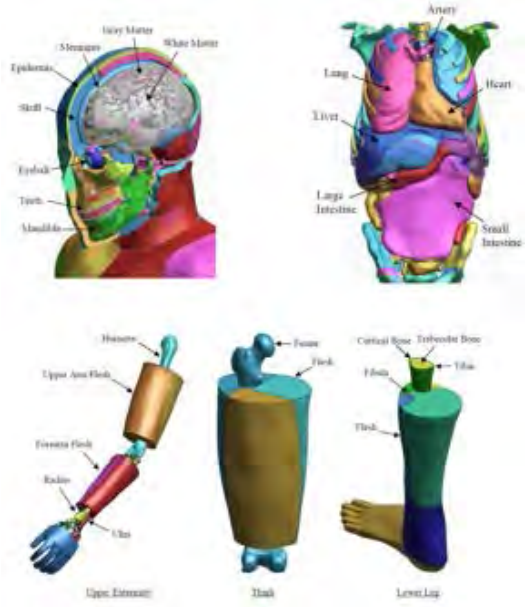
Christian Gehre, Norbert Praxl (PDB), Sebastian Stahlschmidt, Dirk Freßmann (DYNAmore GmbH)

Human body models for occupant protection became popular in the last years. They started to turn from high sophisticated research tools to reasonably applicable tools to support some specific areas of occupant safety.

Total Human Model for Safety - THUMS
LSTC is the US distributor for THUMS

About

The Total Human Model for Safety, or THUMS®, is a joint development of Toyota Motor Corporation and Toyota Central R&D Labs. Unlike dummy models, which are simplified representation of humans, THUMS represents actual humans in detail, including the outer shape, but also bones, muscles, ligaments, tendons, and internal organs. Therefore, THUMS can be used in automotive crash simulations to identify safety problems and find their solutions.

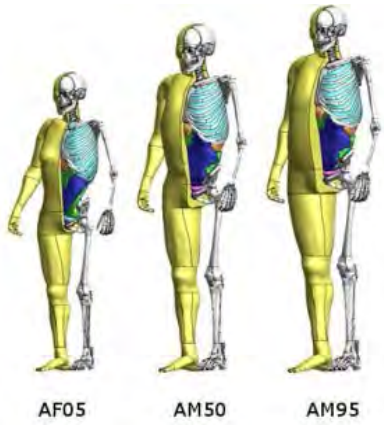


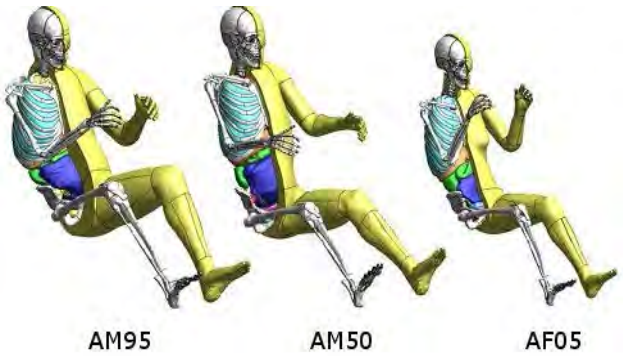
THUMS is limited to civilian use and may under no circumstances be used in military applications.

Model Details: Each of the different sized models is available as sitting model to represent vehicle occupants and as standing model to represent pedestrians.

The internal organs were modeled based on high resolution CT-scans.

LSTC is the US distributor for THUMS. Commercial and academic licenses are available.
For more information please contact us at THUMS@lstc.com .





BETA CAE Systems S.A. www.beta-cae.gr

BETA CAE Systems S.A.– ANSA

Is an advanced multidisciplinary CAE pre-processing tool that provides all the necessary functionality for full-model build up, from CAD data to ready-to-run solver input file, in a single integrated environment. ANSA is a full product modeler for LS-DYNA, with integrated Data Management and Process Automation. ANSA can also be directly coupled with LS-OPT of LSTC to provide an integrated solution in the field of optimization.

BETA CAE Systems S.A.– μETA

Is a multi-purpose post-processor meeting diverging needs from various CAE disciplines. It owes its success to its impressive performance, innovative features and capabilities of interaction between animations, plots, videos, reports and other objects. It offers extensive support and handling of LS-DYNA 2D and 3D results, including those compressed with SCAI's FEMZIP software

CRAY www.cray.com

http://www.cray.com/Products/Products.aspx

The Cray XK6

The Cray XK6 supercomputer combines Cray's proven Gemini interconnect, AMD's leading multi-core scalar processors and NVIDIA's powerful many-core GPU processors to create a true, productive, hybrid supercomputer

Cray XE6™ and Cray XE6m™ Supercomputers

The Cray XE6 scalable supercomputer is engineered to meet the demanding needs of capability-class HPC applications. The Cray XE6m is optimized to support scalable workloads in the midrange market.

Cray XMT™ System YarcData uRiKA™ Graph Appliance

The YarcData uRiKA graph appliance is a purpose built solution for Big Data relationship analytics. uRiKA enables enterprises to discover unknown and hidden relationships in Big Data, perform real-time analytics on Big Data graph problems, and realize rapid time to value on Big Data solutions.

The uRiKA graph appliance complements an existing data warehouse or Hadoop cluster.

Cray Sonexion 1300™ Storage System

The Cray Sonexion 1300 system is an integrated, high performance storage system that features next-generation modular technology to maximize the performance and capacity scaling capabilities of the Lustre file system.

Cray also offers custom and third-party storage and data management solutions

DatapointLabs **www.datapointlabs.com**

Testing over 1000 materials per year for a wide range of physical properties, DatapointLabs is a center of excellence providing global support to industries engaged in new product development and R&D.

The compary meets the material property needs of CAE/FEA analysts, with a specialized product line, TestPaks®, which allow CAE analysts to easily order material testing for the calibration of over 100 different material models.

DatapointLabs maintains a world-class testing facility with expertise in physical properties of plastics, rubber, food, ceramics, and metals.

Core competencies include mechanical, thermal and flow properties of materials with a focus on precision properties for use in product development and R&D.

Engineering Design Data including material model calibrations for CAE Research Support Services, your personal expert testing laboratory Lab Facilities gives you a glimpse of our extensive test facilities Test Catalog gets you instant quotes for over 200 physical properties.

ETA – Engineering Technology Associates www.eta.com

etainfo@eta.com

Inventium Suite™

Inventium Suite™ is an enterprise-level CAE software solution, enabling concept to product. Inventium's first set of tools will be released soon, in the form of an advanced Pre & Post processor, called PreSys.

Inventium's unified and streamlined product architecture will provide users access to all of the suite's software tools. By design, its products will offer a high performance modeling and post-processing system, while providing a robust path for the integration of new tools and third party applications.

PreSys

Inventium's core FE modeling toolset. It is the successor to ETA's VPG/PrePost and FEMB products. PreSys offers an easy to use interface, with drop-down menus and toolbars, increased graphics speed and detailed graphics capabilities. These types of capabilities are combined with powerful, robust and accurate modeling functions.

VPG

Advanced systems analysis package. VPG delivers a unique set of tools which allow engineers to create and visualize, through its modules--structure, safety, drop test, and blast analyses.

DYNAFORM

Complete Die System Simulation Solution. The most accurate die analysis solution available today. Its formability simulation creates a "virtual tryout", predicting forming problems such as cracking, wrinkling, thinning and spring-back before any physical tooling is produced

ESI Group www.esi-group.com

Visual-Environment: Visual-Environment is an integrated suite of solutions which operate either concurrently or standalone within a common environment. It aims at delivering an open collaborative engineering framework. As such, it is constantly evolving to address various disciplines and available solvers.

Visual-Crash is a dedicated environment for crash simulation: It helps engineers get their job done in the smoothest and fastest possible way by offering an intuitive windows-based graphical interface with customizable toolbars and complete session support.

For LS-DYNA users, Visual-Crash DYNA allows to focus and rely on high quality digital models, from start to finish as it addresses the coupling with competitive finite element or rigid body based software. This very open and versatile environment simplifies the work of CAE engineers across the enterprise by facilitating collaboration and data sharing.

Further tools are integrated in Visual-Environment enhancing CAE engineers work tasks most efficiently.

Visual-Mesh generates 1D, 2D and 3D elements for any kind of simulation.
Visual-Mesh provides automatic and guided surfaces clean up, application specific mesh generation and intuitive post mesh editing features..

Visual-Viewer is a complete, productive and innovative post-processing environment for CAE applications.

Visual-Viewer delivers a dedicated plotting and animation control solution. It offers a multi page, multi plot environment, allowing to group data into pages and plots. It is designed with a Windows GUI based on an intuitive and sleek user interface.

Visual-Process Executive is an advanced CAE environment for process customization and automation.

VisualDSS is an End-to-End Decision Support System for CAE. Manufacturers widely resort to Simulation-Based Design to gain a competitive edge in product development.

GNS - Gesellschaft für Numerische Simulation mbH

www.gns-mbh.com

Animator4

A general finite element post-processor and holds a leading position in its field. Animator4 is used worldwide by almost all automotive companies, a great number of aerospace companies, and within the chemical industry.

Generator2.

A specialized pre-processor for crashworthiness applications and has become very successful in the field of passenger safety and pedestrian protection. It is mainly used as a positioning tool for finite element component models by a great number of automobile companies throughout the world.

Indeed

An easy-to-use, highly accurate virtual manufacturing software that specializes in the simulation of sheet metal forming processes. Indeed is part of the GNS software suite and works concurrently with all other GNS software products.

OpenForm

A pre- and post-processor independently of a particular finite element forming simulation package. The software is extremely easy to handle and can be used as was designed to enable those who are not finite element experts to carry out multi-stage forming simulations with even complex multi purpose finite element codes.

Gompute on demand®/ Gridcore AB Sweden
www.gompute.com www.gridcore.se

Gompute is owned, developed and operated by Gridcore AB in Sweden. Founded in 2002, Gridcore is active in three areas: Systems Integration, Research & Development and HPC as a service.

Gridcore has wide experience of different industries and applications, developed a stable product portfolio to simplify an engineer/scientist's use of computers, and has established a large network of partners and collaborations, where we together solve the most demanding computing tasks for our customers. Gridcore has offices in Gothenburg (Sweden), Stuttgart (Germany), Durham NC (USA) and sales operations in The Netherlands and Norway.

The Gridcore developed E-Gompute software for internal HPC resources gives end users (the engineers) an easy-to-use and complete environment when using HPC resources in their daily work, and enables collaboration, advanced application integrations, remote pre/post, accounting/billing of multiple teams, license tracking, and more, accelerating our customers usage of virtual prototyping

.

JSOL Corporation www.jsol.co.jp/english/cae/

HYCRASH

Easy-to-use one step solver, for Stamping-Crash Coupled Analysis. HYCRASH only requires the panels' geometry to calculate manufacturing process effect, geometry of die are not necessary. Additionally, as this is target to usage of crash/strength analysis, even forming analysis data is not needed. If only crash/strength analysis data exists and panel ids is defined. HYCRASH extract panels to calculate it's strain, thickness, and map them to the original data.

JSTAMP/NV

As an integrated press forming simulation system for virtual tool shop the JSTAMP/NV meets the various industrial needs from the areas of automobile, electronics, iron and steel, etc. The JSTAMP/NV gives satisfaction to engineers, reliability to products, and robustness to tool shop via the advanced technology of the JSOL Corporation.

JMAG

JMAG uses the latest techniques to accurately model complex geometries, material properties, and thermal and structural phenomena associated with electromagnetic fields. With its excellent analysis capabilities, JMAG assists your manufacturing process

Livermore Software Technology Corp.

www.lstc.com

LS-DYNA

A general-purpose finite element program capable of simulating complex real world problems. It is used by the automobile, aerospace, construction, military, manufacturing, and bioengineering industries. LS-DYNA is optimized for shared and distributed memory Unix, Linux, and Windows based, platforms, and it is fully QA'd by LSTC. The code's origins lie in highly nonlinear, transient dynamic finite element analysis using explicit time integration.

LS-PrePost

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 Macs utilizing OpenGL graphics to achieve fast rendering and XY plotting.

LS-OPT

LS-OPT is a standalone Design Optimization and Probabilistic Analysis package with an interface to LS-DYNA.

The graphical preprocessor LS-OPTui facilitates definition of the design input and the creation of a command file while the postprocessor provides output such as approximation accuracy, optimization convergence, tradeoff curves, anthill plots and the relative importance of design variables.

LS-TaSC

A Topology and Shape Computation tool. Developed for engineering analysts who need to optimize structures, LS-TaSC works with both the implicit and explicit solvers of LS-DYNA. LS-TaSC handles topology optimization of large non-linear problems, involving dynamic loads and contact conditions.

LSTC Dummy Models

Anthropomorphic Test Devices (ATDs), as known as "crash test dummies", are life-size mannequins equipped with sensors that measure forces, moments, displacements, and accelerations.

LSTC Barrier Models

LSTC offers several Offset Deformable Barrier (ODB) and Movable Deformable Barrier (MDB) model.

Oasys, Ltd **www.oasys-software.com/dyna**

Oasys LS-DYNA® Environment

The Oasys Suite of software, exclusively written for LS-DYNA®, is at the leading edge of the market and is used worldwide by many of the largest LS-DYNA® customers.

Oasys PRIMER is a model preparation tool that is fully compatible with the latest version of LS-DYNA®, eliminating the risk of data loss or corruption when a file is manipulated, no matter what operations are performed on it:

Key benefits:

- Maintains data integrity
- Finds and fixes model errors (currently over 5000 checks)
- Specialist tools for dummy positioning, seatbelt fitting, mechanisms, interior head impact etc.
- Connection manager for spotwelds, bolts, adhesive etc.
- Intelligent editing, deletion and merging of data
- Customisable with macros and JavaScript.

Oasys D3PLOT is a powerful 3D visualization package for post-processing LS-DYNA® analyses

Key benefits:

- Fast, high quality graphics
- Easy, in-depth access to all LS-DYNA® results.
- User defined data components
- Customisable with JavaScript.

Oasys T/HIS is an X-Y graph plotting package for LS-DYNA®

Key benefits:

1. Automatically reads all LS-DYNA® results.
2. Wide range of functions and injury criteria.
3. Easy handling of data from multiple models
4. Scriptable for automatic post-processing

Oasys REPORTER is an automatic report generation tool, for use with LS-DYNA®. which allows fast automatic report creation for analyses.

Shanghai Hengstar www.hengstar.com

Center of Excellence

Hengstar Technology is the first LS-DYNA training center of excellence in China. As part of its expanding commitment to helping CAE Engineers, Hengstar Technology will continue to organize high level training courses and seminars in 2012.

The lectures/training are taught by senior engineers and experts mainly from LSTC, Carhs, OEMs, and other consulting groups.

On Site Training

Hengstar also provides customer customized training programs on-site at the company facility.

Training is tailored for company needs using LS-DYNA or the additional software products by LSTC.

Distribution & Support

Hengstar Distributes and supports LS-DYNA, LS-OPT, LS-PrePost, LS-TaSC. Hongsheng Lu, previously was directly employed by LSTC before opening his distributorship in China for LSTC software.

Hongsheng travels to LSTC often to keep current on the latest software features and support to continue to grow Hengstar as a CAE consulting group.

Comet Solutions www.cometsolutions.com

Comet enables rapid and robust design space exploration from concept discovery and selection through concept validation using a model-based engineering approach. We empower our customers to discover an array of possible design concepts, evaluate which ones are feasible, then select the best.

Comet software is a tool-open, extensible, vendor-neutral performance engineering workspace that lets engineers and engineering project teams readily carry out multi-fidelity, multi-physics modeling and simulation.

In the Comet workspace, companies can better leverage all of their simulation assets – "best practices" expertise, COTS as well as in-house engineering tools, and product performance data.

Canada	**Metal Forming Analysis Corp MFAC** galb@mfac.com www.mfac.com			
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models	LSTC Barrier Models	eta/VPG	
	eta/DYNAFORM	INVENTIUM/PreSys		
United States	**CAE Associates Inc.** info@caeai.com www.caeai.com			
	ANSYS Products	CivilFem	Consulting ANSYS	
			Consulting LS-DYNA	
United States	**DYNAMAX** sales@dynamax-inc.com www.dynamax-inc.com			
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models		LSTC Barrier Models	

United States	**ESI-Group N.A** www.esi-group.com			
	QuikCAST	SYSWELD	PAM-RTM	PAM-CEM
	VA One	CFD-ACE+	ProCAST	Visual-Process
	VisualDSS	Weld Planner	Visual-Environment	IC.IDO
United States	**Engineering Technology Associates – ETA** www.eta.com		etainfo@eta.com	
	INVENTIUM/PreSy	NISA	VPG	LS-DYNA
	LS-OPT	DYNAform		
United States	**Gompute** www.gompute.com		info@gompute.com	
	LS-DYNA Cloud Service		Additional software	
	Additional Services			
United States	**Comet Solutions** Comet Software		steve.brown@cometsolutions.com	

United States	**Livermore Software Technology Corp**		sales@lstc.com	
	LSTC www.lstc.com			
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models	LSTC Barrier Models	TOYOTA THUMS	

United States	**Predictive Engineering** www.predictiveengineering.com		george.laird@predictiveengineering.com	
	FEMAP	NX Nastran	LS-DYNA	LS-OPT
	LS-PrePost	LS-TaSC	LSTC Dummy Models	
			LSTC Barrier Models	

France	**DynAS+**		v.lapoujade@dynasplus.com	
	www.dynasplus.com			
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	DYNAFORM	VPG	MEDINA	
	LSTC Dummy Models		LSTC Barrier Models	

Germany	**CADFEM GmbH**		lsdyna@cadfem.de	
	www.cadfem.de			
	ANSYS	LS-DYNA	optiSLang	
	ESAComp	AnyBody		
	FTI FormingSuite			

Germany	**DYNAmore GmbH**		uli.franz@dynamore.de	
	www.dynamore.de			
	PRIMER	LS-DYNA	FTSS	VisualDoc
	LS-OPT	LS-PrePost	LS-TaSC	DYNAFORM
	Primer	FEMZIP	GENESIS	
	TOYOTA THUMS		LSTC Dummy & Barrier Models	

Germany	**GNS**		mbox@gns-mbh.com	
	www.gns-mbh.com			
	Animator	Generator	Indeed	OpenForm

The Netherlands	**Infinite Simulation Systems B.V**		j.mathijssen@infinite.nl	
	www.infinite.nl			
	ANSYS Products	CivilFem	CFX	Fluent
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Italy	**EnginSoft SpA**		info@enginsoft.it	
	www.enginsoft.it			
	ANSYS	MAGMA	Flowmaster	FORGE
	CADfix	LS-DYNA	Dynaform	Sculptor
	ESAComp	AnyBody	FTI Software	
	AdvantEdge	Straus7	LMS Virtual.Lab	ModeFRONTIER
Russia	**STRELA**		info@dynarussia.com	
	LS-DYNA	LS-TaSC	LS-OPT	LS-PrePost
	LSTC Dummy Models		LSTC Barrier Models	
Sweden	**DYNAmore Nordic**		marcus.redhe@dynamore.se	
	www.dynamore.se			
	ANSA	µETA	LS-DYNA	LS-OPT
	LS-PrePost	LS-TaSC	FastFORM	DYNAform
	FormingSuite		LSTC Dummy Models	
			LSTC Barrier Models	
Sweden	**GRIDCORE**		info@gridcore.com	
	www.gridcore.se			
	LS-DYNA Cloud Service		Additional software	

Switzerland	**DYNAmoreSwiss GmbH**		info@dynamore.ch	
	www.dynamore.ch			
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	LS-TaSC		LSTC Dummy Models	
			LSTC Barrier Models	
UK	**Ove Arup & Partners**		dyna.sales@arup.com	
	www.oasys-software.com/dyna			
	LS-DYNA		LS-OPT	LS-PrePost
	LS-TaSC	PRIMER	D3PLOT	T/HIS
	REPORTER	SHELL	FEMZIP	HYCRASH
	DIGIMAT	Simpleware	LSTC Dummy Models	
			LSTC Barrier Models	

Australia	**LEAP**			
	www.leapaust.com.au			
	ANSYS Mechanical	ANSYS CFD	ANSYS EKM	Recurdyn
	ANSYS DesignXplorer	ANSYS HPC	FlowMaster	Ensigh
	LS DYNA	DYNAform	Moldex 3D	FE-Safe
China	**ETA – China**		lma@eta.com.cn	
	www.eta.com/cn			
	Inventium	VPG	DYNAFORM	NISA
	LS-DYNA	LS-OPT	LSTC Dummy Models	LS-PrePost
			LSTC Barrier Models	LS-TaSC
China	**Oasys Ltd. China**		Stephen.zhao@arup.com	
	www.oasys-software.com/dyna			
	PRIMER D3PLOT	HYCRASH	T/HIS REPORTER	SHELL
	LS-DYNA	LS-OPT	LSTC Dummy Models	LS-PrePost
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China	**Shanghai Hengstar Technology**		info@hengstar.com	
	www.hengstar.com			
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	LS-DYNA Courses	LS-OPT	LSTC Dummy Models	LS-PrePost

India **Oasys Ltd. India** lavendra.singh@arup.com

www.oasys-software.com/dyna

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India **CADFEM Eng. Svce** info@cadfem.in

www.cadfem.in

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India **Kaizenat Technologies Pvt. Ltd** support@kaizenat.com

http://kaizenat.com /

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Japan **ITOCHU** LS-dyna@ctc-g.co.jp

www.engineering-eye.com

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Japan **JSOL**

www.jsol.co.jp/english/cae

JSTAMP | HYCRASH | JMAG

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LSTC Dummy Models | LSTC Barrier Models | TOYOTA THUMS

Japan **FUJITSU**

http://jp.fujitsu.com/solutions/hpc/app/lsdyna

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LSTC Dummy Models | LSTC Barrier Models | CLOUD Services

Japan **LANCEMORE** info@lancemore.jp

www.lancemore.jp/index_en.html

Consulting LS-DYNA

Korea	**THEME**	wschung@kornet.com		
	www.lsdyna.co.kr			
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models	LSTC Barrier Models	eta/VPG	Planets
	eta/DYNAFORM	FormingSuite	Simblow	TrueGRID
	JSTAMP/NV	Scan IP	Scan FE	Scan CAD
	FEMZIP			

Korea	**KOSTECH**	young@kostech.co.kr		
	www.kostech.co.kr			
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models	LSTC Barrier Models	eta/VPG	FCM
	eta/DYNAFORM	DIGIMAT	Simuform	Simpack
	AxStream	TrueGrid	FEMZIP	

Taiwan	**Flotrend**	gary@flotrend.tw		
	www.flotrend.com.tw			
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models	LSTC Barrier Models	eta/VPG	FCM

Taiwan	**APIC**			
	www.apic.com.tw			
	LS-DYNA	LS-OPT	LS-PrePost	LS-TaSC
	LSTC Dummy Models	LSTC Barrier Models	eta/VPG	FCM

Germany	Gompute	www.gompute.com
Sweden	Gompute	www.gompute.com
United States	Gompute	www.gompute.com

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The Complete Courses Offered Can Be Found At: www.cadfem.de

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The Complete Courses Offered Can Be Found At: www.dynamore.se

Training Classes France DynAS+ Training Classes

The complete Training Courses offered can be found at www.dynasplus.com

Training Classes	Thailand	Training Classes

Complete Courses offered can be found at: **http://www.dfe-tech.com/training.html**

Training Classes	United States ETA	Training Classes

The Complete Courses Offered Can Be Found At: www.eta.com etainfo@eta.com

Training Classes	United States CAE Associates	Training Classes

The Complete Courses Offered Can Be Found At: www.caeai.com

Training Classes	France Alyotech Technologies	Training Classes

For course location visit www.alyotech.fr

 **FACEBOOK**

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Cray Inc.
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 **TWITTER**

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http://www.twitter.com/cray_inc

ESI Group
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ETA
http://twitter.com/ETA_Inc

GNS
https://twitter.com/gnsmbh

LINKEDIN

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ETA

http://www.linkedin.com/groupRegistration?gid=1960361

Oasys

http://www.linkedin.com/groups/Oasys-LSDYNA-Environment-Software-4429580?gid=4429580&trk=hb_side_g

YOUTUBE

BETA CAE SYSTEMS SA

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Cray Inc. http://www.youtube.com/user/crayvideo

ESI Group http://www.youtube.com/ESIgroup

ETA http://www.youtube.com/user/etainfo1

Lancemore http://www.youtube.com/user/LancemoreJP?feature=watch

NEWS FEEDS

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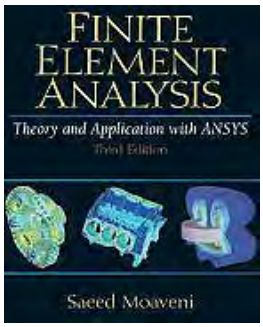
Time-Domain Finite Element Methods for Maxwell's Equations in Metamaterials (Springer Series in Computational Mathematics	*Jichun Li*
Finite Element Analysis: A Primer (Engineering)	*Anand V. Kulkarni - V.K. Havanur*
Finite Element Methods for Engineers	Roger T. Fenner
July 2013 Finite Element Mesh Generation	*Daniel Lo*
January 2013 The Finite Element Method: Theory, Implementation, and Applications (Texts in Computational Science and Engineering)	*Mats G. Larson -, Fredrik Bengzon*
January 2013 Finite and Boundary Element Tearing and Interconnecting Solvers for Multiscale Problems (Lecture Notes in Computational Science and Engineering)	*Clemens Pechstein*
January 2013 Structural Analysis with the Finite Element Method. Linear Statics: Volume 2: Beams, Plates and Shells (Lecture Notes on Numerical Methods in Engineering and Sciences)	*Eugenio Oñate*
Elementary Continuum Mechanics for Everyone: With Applications to Structural Mechanics (Solid Mechanics and Its Applications)	*Esben Byskov*

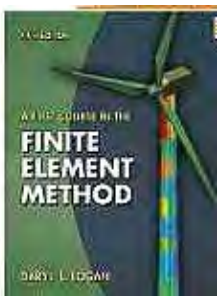


Finite Element Analysis Theory and Application with ANSYS (3rd Edition)

Saeed Moaveni

Practical Stress Analysis with Finite Element

Bryan J Mac Donald

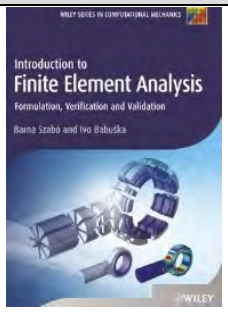


A First Course in the Finite Element Method

Daryl L. Logan

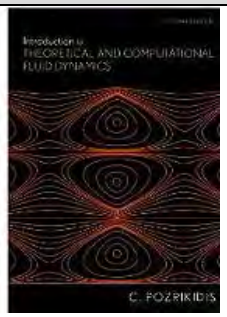
Finite Element Modelling Techniques in MSC.NASTRAN and LS/DYNA

Sreejit Raghu



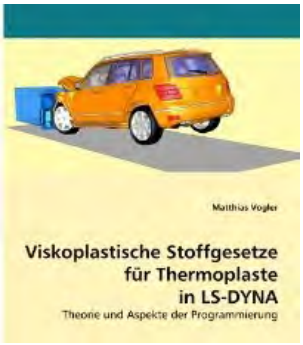
Finite Element Analysis/formulation & verification

B. A. Szabo



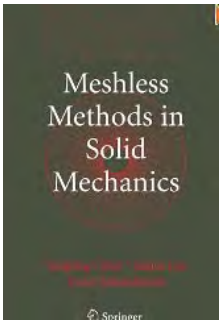
Introduction to Theoretical and Computational Fluid Dynamics

C. Pozrikidis



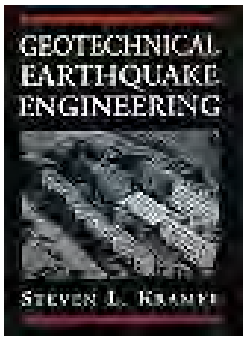
[Viskoplastische Stoffgesetze für Thermoplaste in LS-DYNA: Theorie und Aspekte der Programmierung]

Matthias Vogler



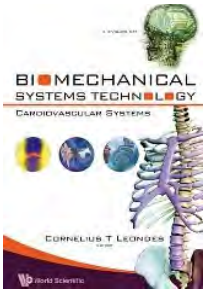
[Meshless Methods in Solid Mechanics]

Youping Chen



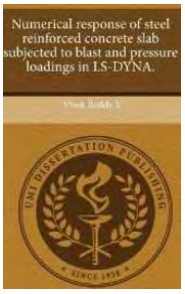
[Geotechnical Earthquake Engineering]

Steven Lawrence Kramer



[Biomechanical Systems Technology: Computational Methods]

Cornelius T. Leondes

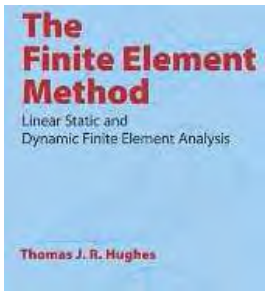


[Numerical response of steel reinforced concrete slab subjected to blast and pressure loadings in LS-DYNA.]

Vivek Reddy

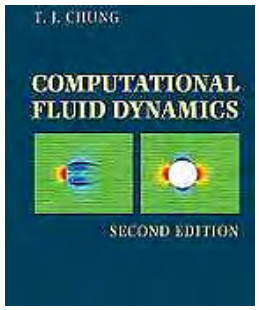
[Formulas for Mechanical and Structural Shock and Impact]

Gregory Szuladziniski



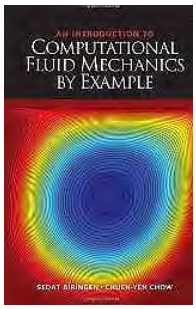
[The Finite Element Method]

Thomas J. R. Hughes



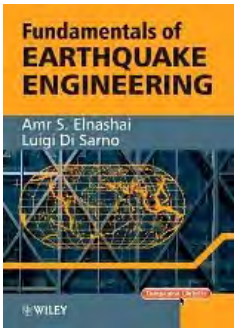
[Computational Fluid Dynamics]

T. J. Chung



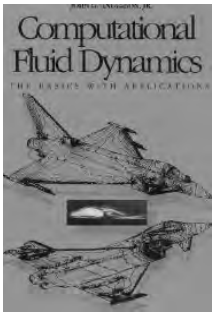
[An Introduction to Computational Fluid Mechanics by Example]

Sedat Biringen



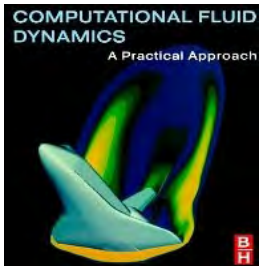
[Fundamentals of Earthquake Engineering]

Amr S. Elnashai



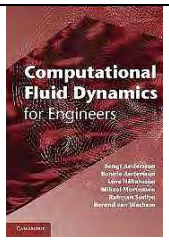
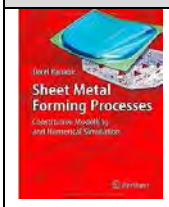
[Computational Fluid Dynamics]

John David Anderson



[Computational Fluid Dynamics: A Practical Approach [Paperback]]

Guan Heng Yeoh

			
Theories, Methods… Ping Hu, Ning Ma, …	CFD for Engineers	CAE design and sheet metal forming… Li Fei Zhou Deng	Applied Metal Forming
			
Micro Metal Forming (Lecture Notes in Production Engineering)	The Finite Element Method: Theory, Implementation, and Applications (Texts in Computational Science and Engineering) [Hardcover]		

Conference Schedule: **Oct.16th – 18th**

Oct. 16Th	Evening	Registration, Reception party
Oct. 17th	Morning Main Session	Keynote Speakers speech **Dr. John O. Hallquist** **Dr. Lin Zhongqin** **Dr. Zhou Qing** **Dr. Wu Shenrong** **Dr. Li Genguo**
	Afternoon Session	1. Automotive crashworthiness(1) 2. MPP 3. Simulation Technogloy 4. EFG, NVH, Multi-Physics 2
	Evening	Banquet
10月18日	Morning Session	1. Automotive crashworthiness(2) 2. Metal Forming 3. Airbag, Ale, CMP, SPH 4. Pre,Post processing and Optimization
	Afternoon Main Session	Latest LSTC products updates LSTC expert will introduce Latest LSTC products updates

Training Classes: Oct. 15th - 16th

No	Class Title	Date	Language	Instructor
C1	ALE/FSI	15th -16th	Chinese	Hao Chen
C2	LS-OPT Introduction	15th -16th	English	Nielen Stander
C3	LS-DYNA(R) in Sheet Metal Forming Simulation	15th -16th	Chinese	Xinhai Zhu
C4	MPP and Particle Airbags	15th -16th	Chinese	Jason Wang
C5	Passive Safety	15th -16th	English	Dilip Bhalsod
C6	LS-PrePost	19th -20th	Chinese	Zhan Ding, Wang Kai

ALE/FSI

This course is to provide an understanding of ALE method implemented in LS-DYNA package and its fluid structure interaction mechanism. LS-DYNA employs multi-material ALE formulation to model fluids. Together with its own tightly-coupled fluid structure interaction method, it excels in simulating a series of engineering problems that involve fluids carrying large momentum or high energy density impacting, penetrating Lagrange structures. For examples, explosions, tank sloshing, container dropping, bird strike, projectile-hitting-target, etc.

This course expects audiences to have an understanding of finite element method and a basic knowledge of LS-DYNA package (be able to construct, execute and analyze a simple Lagrange structure model). Advanced knowledge in finite element method and computational fluid dynamics is helpful but not necessary.

ALE/FSI

This course will start with a brief introduction to finite element method and cover certain key concepts in element technology such as reproducing condition, locking, hourglassing, etc. Next the advection process will be introduced in the description of single-material ALE method. Then interface reconstruction algorithm used to model inter-element fluid interfaces is going to be discussed in the multi-material Eulerian method section. Mesh motion is covered to wrap up the ALE part and the first day of the class.

The second day we will concentrate on the fluid structure interaction part. We start with a simple contact case as it is more familiarized with LS-DYNA users. By comparing the contact and coupling algorithms, we smooth our entrances to the ALE FSI concepts. Next we cover several aspects of the coupling method, such as construction of fluid interface and structure interface, penalty spring, leakage, etc. Key points of performing a successful FSI analysis are then discussed. We conclude the class by briefly discussing different types of applications and their modeling techniques.

LS-OPT Introduction

Over the duration of the class, students work in groups of two (sometimes individually) to work/solve the exercises. The exercises are simple, so that they take a short time to run, but contain enough complexity to give insight into the optimization process. Most of the problems are nonlinear (large deformation) dynamic and will be solved using LS-DYNA simulation. The following topics are discussed.

- **Optimization Theory.** Fundamentals, Experimental Design, Metamodeling, Optimization, Examples.
- **Running LS-OPT and using the post-processor.** Run LS-OPT and do post-processing using the Viewer (graphical post-processor).
- **Simple Optimization with LS-DYNA.** Learn how to set up a simple optimization problem from the start. Make design revisions such as adding simulations or changing the design formulation. Run an automated optimization.
- **Import Analysis Results table.** Import existing analysis results and conduct an optimization run without new simulations.
- **Direct Optimization.** Direct Optimization using the genetic algorithm with LS-DYNA as solver.
- **Multi-Objective Optimization.** Learn how to set up a simple LS-DYNA example with multiple objectives. Both direct and metamodel-based examples.
- **User-defined example.** Learn the setup for optimization using user-defined (i.e. non-DYNA) simulations. Neural net applications.
- **Modal Analysis and Tracking.** Learn how to set up an optimization problem with frequency constraints and mode tracking, using the LS-DYNA implicit analysis. Select the most important variables using design sensitivities.
- **Multi-disciplinary optimization.** Learn how to set up an optimization problem with more than one case or discipline. Combines crashworthiness with frequency criteria in a single design using the explicit and implicit versions of LS-DYNA. (If time allows).
- **System Identification.** A problem to identify material parameters from experimental results. Set up a multi-case problem. Confidence intervals. Methods include both the classical ordinate-based method as well as the Curve Mapping approach, designed for material calibration using general response history curves or crossplots.

CHINA & Int'l LS-DYNA® Users Conference – 1st October 16, 2013

LSTC US & Dalian Fukun Technology, Ltd. China
The 1st China & International LS-DYNA® Users Conference
Oct. 16 at Dalian, China.

The 1st China & US LS-DYNA® Users Conference
Dalian Fukun China & LSTC US
Oct. 16th-18th, 2013 - Dalian, China

Dalian Inn Fine Hotel, Dalian China.

Join us to meet LSTC Developers, Dalian Developers, Professors, Engineers all dedicated to the growth of LS-DYNA and alliance partners products in the China market. Expected are attendees from Taiwan, Thailand, Korea, US, and other countries.

Learn new LS-DYNA features, share your LS-DYNA experience with developers, professors, and engineers from industry experts, end users and LSTC/Dalian developers.

China was chosen due to the rapid growth in CAE technology. LS-DYNA, as the leading finite element software in the industry, has been well acknowledged and widely adopted in China and worldwide, in various industries such as Automotive, Aerospace and Aeronautics, and Electrical & Electronics.

Headquartered in Livermore, California, Livermore Software Technology Corporation (LSTC) develops LS-DYNA and a suite of related and supporting engineering software products: LS-PrePost, LS-OPT, LS-TaSC and LSTC's ATD and Barrier Models.

The conference will be held regularly and be China's main LS-DYNA Conference platform for researchers and engineers to exchange ideas, new developments and to encourage communications between software developers, users, and others in industry and academia

We welcome all LS-DYNA users to share their knowledge by submitting papers.

.

Site: www.dalianfukun.com/conference
Contact us: chinaconf@lstc.com

LSTC US & DYNAmore Germany

The 13th US & International LS-DYNA® Users Conference

June 08-10, 2014 Dearborn, MI

Welcome and Call For Papers

Livermore Software Technology Corporation (LSTC) is pleased to bring engineers, professors, students, consultants, industry leaders and interested parties together at the 13th International LS-DYNA® Users Conference to be held at the Adoba Hotel (formerly the Hyatt Regency) Dearborn, MI.

Abstract Deadline: 11/11/2013	**email your abstract to:** papers@lstc.com	**Notification:** No later than 12/15/2013
Paper Deadline: March 05, 2014	The presenter of each accepted paper will receive free admission to the conference, provided that the presenter registers for a room at the Adoba Hotel under LSTC Conference registration.	

Application Areas Being Accepted for Paper Submission:

• Aerospace	• Heat Transfer	• Seismic Engineering
• Automotive Crashworthiness	• Impact and Drop Testing	• Ship Building
• Ballistic and Penetration	• Manufacturing Processes	• Transportation
• Biomechanics	• Metal Forming	• Virtual Proving Ground
• Civil Engineering	• Modeling Techniques	
• Compressible Fluid Dynamics	• Nuclear Applications	
• Electromagnetics	• Occupant Safety	

Abstract Length: Approximately 300 words; please include figures, if possible

Paper Length: Maximum of 3000 words, single-spaced, on 8-1/2" x 11" paper

Format: A MS Word template will be provided

Contact: papers@lstc.com

Livermore Software Technology Corporation

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