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JULY 2011

GridCore AB

Gompute on demand

Making A Difference

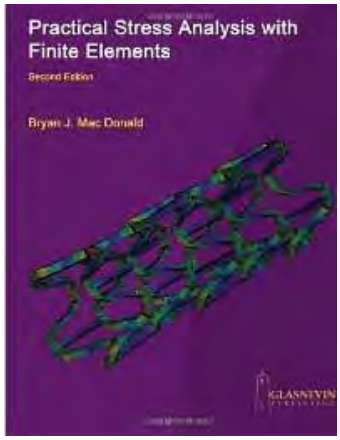
Dr. Bryan Mac Donald

Automotive Showcase

Mercedes-Benz C 63 AMG Coupé

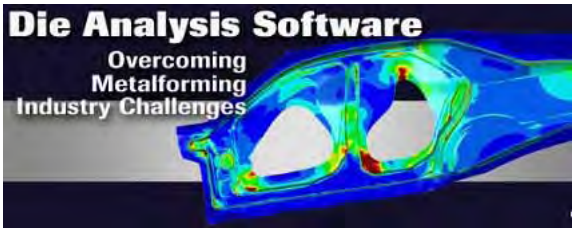
DYNAmore GmbH acquires Engineering Research AB

Book of the Month



Practical Stress Analysis With Finite Elements

Free Webinar



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May Issue: LS-TaSC Version 2
June Issue: Lancemore Corp. AVI Rubber Powered Airplane

Announcements

ETA will be holding a Free Webinar – July 28th

Dr. Bryan Mac Donald

We are pleased to bring you Dr. Bryan Mac Donald in our section Making A Difference and an introduction to his book Practical Stress Analysis with Finite Elements

New Participant:

#GRIDCORE

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

Offering Gompute On Demand in Sweden and Germany. to LS-DYNA customers through DYNAmore Germany and DYNAmore Nordic.

DYNA MORE Germany and the new company: DYNAmore NORDIC

Sincerely, Marsha J. Victory, President, FEA Information Inc
mv@feainformation.com

From engineering to horses - http://www.livermorehorses.com

The Ranch Goss Hawk, Skylar. Skylar is one of four Goss Hawks that live on the ranch
.

FEA Information

Participants

Platinum

OASYS Ltd: http://www.oasys-software.com/dyna/en/	**JSOL Corporation**: http://www.jsol.co.jp/english/cae	**SGI:** http://www.sgi.com
ETA: http://www.eta.com	**DYNAmore GmbH** http://www.dynamore.de	**ESI Group**: http://www.esi-group.com
BETA CAE Systems S.A.: http://www.beta-cae.gr	**LSTC:** http://www.lstc.com	**Dalian Fukun Technology Co. Ltd.:**
MICROSOFT http://www.microsoft.com	**Panasas, Inc.** http://www.panasas.com	**Shanghai Hengstar Technology Co. Ltd** http://www.hengstar.com/
GridCore AB http://gridcore.se		

Bronze Participants

Data Point Labs	APACS	Lancemore Corporation

DYNAmore Nordic AB

DYNAmore Germany AB

DYNAmore acquires Engineering Research Nordic AB

Stuttgart and Linköping, July, 1st 2011 –

DYNAmore announces the acquisition of all assets of Engineering Research Nordic AB, the LS-DYNA distributor for the Nordic countries and the Baltic States. On July 1st, DYNAmore Nordic AB, a wholly owned subsidiary of DYNAmore GmbH, took over all the business of Engineering Research, including all software sales and support for LSTC, Beta CAE systems, ETA Engineering, ARUP, FTI, and Humanetics. Also all engineering and CAE services will be continued by DYNAmore Nordic AB. The Engineering Research staff continues to work for DYNAmore Nordic AB. The newly assigned executive directors, Dr. Daniel Hilding and Dr. Marcus Redhe, who were in leading positions with Engineering Research AB for many years, are extremely excited to be working with DYNAmore and bringing together top CAE experts from both companies:

“We are looking forward to join forces, with such an excellent company as DYNAmore. They have a very solid and extremely competent background in nonlinear mechanical simulation tasks. In a number of joint projects in the past, we have discovered that a potential merger between the companies has a huge potential as the expertise of the two companies is really complimentary. We are sure that our customers in the Nordic countries and Baltic states will benefit in several ways: Support services can be handled more efficiently, training courses can be offered for new application areas, and software licensing can be handled in a global manner. In all aspects DYNAmore was the by far preferred partner for the next steps regarding our business in the Nordic countries.”

Uli Franz, Managing Director of DYNAmore GmbH:

“The Engineering Research Nordic AB acquisition is one step in our strategy to offer our expertise in countries outside Germany as well. We will continue to work as LS-DYNA distributor for all german-speaking countries and selected countries in Europe providing top-level support, development, and consulting ser-vices. For such services the access to excellent staff members is crucial. Through the acquisition of Engineering Research Nordic AB our LS-DYNA code development group increased to a total of 10 people working in different areas of LS-DYNA, LS-OPT, and LS-PrePost functionalities. This also gives us the opportunity to unify and optimize our software development process in order to increase the output and value both for

our customers and our software partner LSTC, the owner of the LS-DYNA code."

John Hallquist, owner of LSTC adds:
"We are pleased by the news that our leading European Distributor, DYNAmore, has acquired all assets of ERAB and will now be the representative of LS-DYNA in the Nordic countries. Additionally, DYNAmore is gaining new responsibilities in the areas of corporate licensing and reseller contracts throughout Europe. LSTC believes that the software development groups funded by LSTC, based in Linköping and Stuttgart, will play an increasingly important role in LS-DYNA, LS-OPT, and LS-PrePost developments. Many new features have been implemented by the European developers, and under the new structure the two development groups will merge under a single management to decrease the turnaround time for new developments."

More Information:

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Conference Paper Showcase
Paper available for download at:
DYNALOOK

High Fidelity In-Bore Pressure Modeling

http://www.dynalook.com/international-conf-2010/BlastImpact-2-1.pdf

Michael M. Chen
U.S. Army Research Laboratory
RDRL-WML-G
Aberdeen Proving Ground, MD 21005

Abstract

Significant research efforts have been conducted to gain an in-depth understanding of projectile-weapon interactions at the U.S. Army Research Laboratory. The objective of this paper is to increase the fidelity of in-bore modeling and simulations that will facilitate the development of component and system models for U.S. Army weapon systems. Specifically, the in-bore pressure as a projectile travels through a gun tube, which has been known to be spatially and temporally varying distribution, will be programmatically taken into account in finite element analysis of launch dynamics.

A computer program that embeds IBHVG2 Interior Ballistics code was implemented to automate the process. This tool can apply a substantial number of pressure curves to the corresponding barrel locations and generate LS-DYNA® compatible keyword files for analysis. The approach yields better accuracy and eliminates tedious manual efforts. In short, the development greatly streamlines the modeling efforts and significantly increases the fidelity of in-bore pressure modeling.

Conference Paper Showcase
Paper available for download at:
DYNALOOK

An Assessment of the New LS-DYNA® Multi-Layered Solid Element: Basics, Patch Simulation and its Potential for Thick Composite Structural Analysis

http://www.dynalook.com/international-conf-2010/Automotive-1-1.pdf

Madhukar Chatiri1, Thorsten Schütz2, Anton Matzenmiller3

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Abstract:

Limitation of fossil fuels and global warming favor the introduction of new powertrain concepts for road vehicles with highest efficiency and low greenhouse gas emissions. Fuel cell vehicles offer the highest potential for sustainable mobility in the future. One major component of fuel cell vehicles is the hydrogen storage system. A promising and currently the most-used approach is to store hydrogen in wet-wound carbon fiber reinforced plastic (CFRP) vessels manufactured by a filament winding process with an operating pressure of up to 70 MPa (hereafter referred as H2 vessel). Due to the inherent complexity and the 3-dimensional nature, accurate behavior of such thick composite structures in impact simulations needs an adequate representation of the composite plies.

Modeling thick composite structures with two-dimensional elements will produce inaccurate results in transverse normal direction. Therefore, 3D modeling should be used but the idealization of each ply with one solid element leads to undesirably large models and is impractical for large structures. Hence, representation of several plies in one solid element and more such elements across the thickness is

aspired. An improved multi-layered solid element showing excellent efficiency of CPU time is implemented in the code of LS-DYNA® Version 971 R4. Like any brick element, it resolves the 3D stress state necessary for impact directions normal to the outer vessel surface. The element allows the definition of multiple integration points through the thickness in order to account for stacks of plies with arbitrary fiber orientation. By defining several layers with different material properties and ply orientations inside one multi-layered solid, the number of elements through the thickness is remarkably reduced and still, the result is close to the one obtained from the detailed finite element model of one brick element per layer. As depicted in Fig.1.2, a complex laminate configuration consisting of 18 different plies with varied fiber angles is represented by one multi-layered solid element with 18 integration points through the thickness.

The above new element formulation is presented in this paper describing simulation results for both, different patches and for thick composite structures such as for hydrogen storage H2 vessels.

Keywords: Multi-layered solid, filament winding, thick composites, H2 pressure vessel analysis

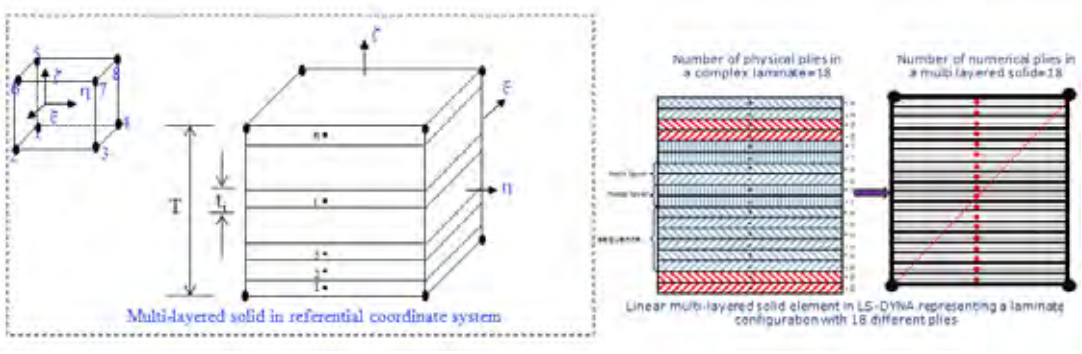


Fig. 1.2: Eight-node multi-layered solid element

Making A Difference

Dr. Bryan Mac Donald

Dublin City University

Dr. Bryan Mac Donald - Senior Lecturer in Computer Aided Design
Medical Engineering Research Centre, School of Mechanical Engineering
Dublin City University - Dublin 9 - Ireland

http://www.medeng.dcu.ie/
http://www.dcu.ie/info/staff_member.php?id_no=1127

Areas of Interest:

Computational modeling of the in-service behavior of orthopedic and vascular medical devices, design of innovative medical devices, optimization of complex engineering products/process using non-linear FEA

Overview

Dr. Mac Donald is a senior lecturer in computer aided design at Dublin City University, Ireland, where he teaches on undergraduate and postgraduate programs in mechanical and biomedical engineering. He has been teaching FEA to trainee engineers for over 15 years. His experience of teaching introductory FEA to young engineers and seeing them struggle with the more advanced concepts led him to write the book "Practical Stress Analysis with Finite Elements" in 2007. Due to significant demand and impressive sales a second edition of this book was published in 2011. The objective of this book is to provide a gentle introduction to the field for students or practicing engineers/analysts who are encountering FEA for the first time. Although the book contains the requisite underlying theory of the FEM it is not the main focus of the book, rather the emphasis is on getting the reader to the point where they can carry out their first independent analysis in a competent and professional manner. The book is written in a generic way so that it can be used in tandem with any available FE software and uses practical and "real world" examples to demonstrate key concepts and methodologies. Feedback from users of the book has been very positive and the book has been adopted as a key text for university courses in the USA, Europe and Asia.

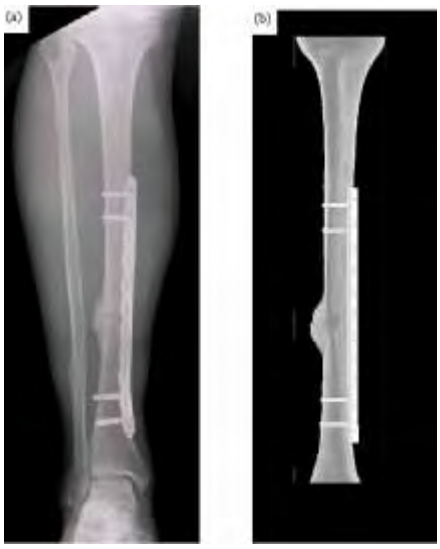
Research

Dr. Mac Donald's research has in the past focused on using non-linear FEA and optimization techniques to optimize a number of complex metal forming processes including hydro-forming and forming of magnesium alloys. Recent work has been more focused on medical devices and applying the skills learnt from previous work to this field. His current work falls into two major themes:

- Computational modeling of bio-absorbable vascular implants
- Computational modeling of the in-service behavior of orthopedic implants

Work with industrial partners on absorbable magnesium alloy devices has resulted in a number of absorbable magnesium implants which are the final stages of development. FE simulation of the deployment and subsequent degradation of these implants in-vivo played a key role in optimizing the final design of these implants.

Recent work in the orthopedic field has concentrated on understanding the process of bone healing via callus formation by using FEA to predict soft tissue and callus formation post fracture. This work was carried out in collaboration with clinicians from the Royal College of Surgeons in Ireland (RCSI).



(a) Anterio-posterio view of radiographic image of fractured tibia with callus formation 3 months post-op and (b) Predicted callus formation in FE model of same tibial fracture. Note, element edge lines are not shown.

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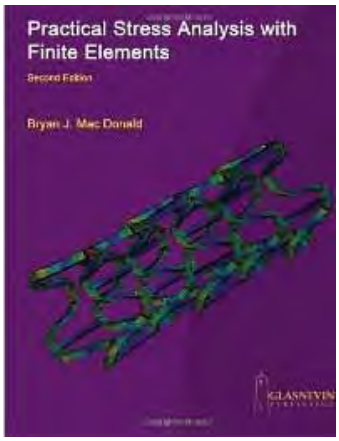


Practical Stress Analysis With Finite Elements

Gridcore AB

Sweden.

Gompute on demand®

A Cloud HPC service oriented to Technical and Scientific users.

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) a 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.

Website: www.gompute.com
Website: www.gridcore.se

A free webinar
sponsored by ETA,
hosted by MetalForming magazine

Thursday, July 28, 2011 • 2:00-3:00 PM EST

Learn how metalforming companies apply DYNAFORM, Engineering Technology Associates' die-analysis software, to meet design challenges head-on.

Attendees of this free 1-hr. webinar will enjoy demonstrations addressing key industry challenges using functions within specific DYNAFORM modules.

The specific challenges that will be addressed using three distinct software modules:

- Quickly Determining Part/Project Feasibility
- Providing Preliminary Validation of the Design Concept
- Identifying Potential Part Issues, During the Tooling Design Stage

Also, a metalforming case study will describe successful springback-compensation analysis at Woodbine Tool and Die, for stamping a fuel filler door.

To learn more and register to attend.

http://www.eta.com/index.php/dynaformwebinar

Aerospace

Information

The Aeritalia F-104S Starfighter

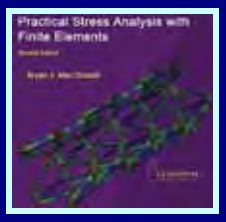
The following does not represent any software. It is solely based on our Staff's choice of a Jet Fighter deserving a showcase.

The Aeritalia F-104S Starfighter was a licensed production Italian version of the Lockheed F-104 Starfighter which served in the Italian Air Force (AMI, Aeronautica Militare Italiana), and was the AMI's mainstay from the late 1960s until the beginning of the 21st Century. The F-104S also served in the Turkish Air Force until the mid-1990s. The F-104S was the final development of the Starfighter line.

Derived from Lockheed's design studies on a "Super Starfighter", the F-104S was one of the most capable of the F-104 series, and destined to be the last in service worldwide. The F-104S (upgraded to ASA/M standard) was retired from service in October 2004.

The F-104 series had entered a second development phase with the F-104G. While the USAF had no more interest in the F-104, Lockheed proposed the Model CL-901 featuring the new J79-GE-19 engine and the Sparrow III missiles; "G" denoted "Germany," the lead country for this version, while "S" indicated the improved "Sparrow" version.[1] Further proposed developments included the CL-958 with larger wings, the CL-981 with retractable canard wings behind the cockpit, and the CL-984 optimised for low-level strike missions. An RF-104G was modified and flew in December 1966 as the prototype CL-901 "Super Starfighter." Externally, the new type had slightly larger air intakes and steel inlet guide vanes that allowed an increase in operating temperature from 121°C to 175°C, enabling a maximum speed of Mach 2.2.

During the first five years in Italian service, 23 F-104G aircraft were lost; and as only 80 to 90 F-104s (of 149 acquired) were operational at best, it was decided to purchase a new interceptor and fighter-bomber to reinforce the first line units.



Book of the Month

Practical Stress Analysis With Finite Elements

Preface Excerpt:

"….The intended audience is anyone who needs to learn how to use FEA and how to avoid making the common mistakes that newcomers to the method generally make. The text is written in a manner such that it is not specific to any particular FEA software package. Examples are shown using several different commonly available packages and the description of the analysis in each case is kept generic. Whilst the original goal of this text is to aid the undergratduate of postgraduate student who is taking a first course in FEA, it is my earnest hope that it may also be valuable to researchers and practicing engineers who are new to FEA and/or require guidance in its application…."

Among the Chapters you will find:

Chapter 2: Fundamentals of Stress Analysis
Chapter 3: Finite Element Procedures
Chapter 4: Elements
Chapter 5: Material Modeling
Chapter 6: Modelling and Meshing
Chapter 7: Boundary Conditions and Loading
Chapter 8: Solution
Chapter 9: Post Processing
Chapter 10: Case Studies

Practical Stress Analysis With Finite Elements

Moving Ahead Auto motive Showcase

Mercedes-Benz C 63 AMG Coupé

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Affalterbach – Spectacular design, technology transfer from the world of motorsport and driving dynamics at the highest level; the new Mercedes-Benz C 63 AMG Coupé Black Series embodies the new AMG brand claim, Driving Performance, like no other AMG model. The new high-performance vehicle is the most powerful C-Class of all time, boasting a maximum output of 380 kW (517 hp) and a maximum torque of 620 newton metres. The AMG 6.3-litre V8 engine impresses with its hefty torque, tremendous pulling power and responsiveness, and ensures high-calibre performance: the C 63 AMG Coupé Black Series accelerates from zero to 100 km/h in 4.2 seconds (all data provisional). Exclusive fun at the wheel comes courtesy of the adjustable AMG coil-over sports suspension, the AMG high-performance compound braking system and the functional standard equipment. The AMG Track Package is available as an option to enhance driving dynamics even further. It boasts sports tyres and active rear-axle transmission cooling, plus the AMG Aerodynamics package including flics, a functionally tuned front splitter and an adjustable carbon-fibre rear aerofoil.

Broad, low, brawny and ready to pounce from a standstill – the C 63 AMG Coupé Black Series makes a mighty impression. It's clear right from the first time you set eyes on it that the C 63 AMG Coupé Black Series is made for ambitious laps on a closed-off race track. In visual terms the new high-performance vehicle is reminiscent of the SLS AMG GT3 customer sports car and symbolises the transfer of technology from the sphere of motorsport, which has been part of the corporate philosophy of Mercedes-AMG GmbH for 44 years now.

With its new C 63 AMG Coupé Black Series, AMG is presenting an exciting sports car for enthusiasts who are passionate about sports cars which are big on horsepower, and this marks the impressive continuation of the Black Series strategy, which began back in 2006. AMG, the performance brand of Mercedes-Benz Cars, is once again demonstrating its expertise when it comes to designing and developing emotionally appealing high-performance cars.

"AMG has its roots in international motorsport. The new C 63 AMG Coupé Black Series is the best proof there is for the permanent transfer of technology from the race track to the road. The numerous successes in the DTM, the customer sports range featuring the SLS AMG GT3 and our commitment to Formula 1, where we have been providing the Official F1Ô Safety Car and the Official F1 Ô Medical Car for the past 15 years, continuously spur on our engineers and technicians. The C 63 AMG

Coupé Black Series embodies the new AMG brand claim, Driving Performance, like no other AMG model", comments Ola Källenius, the CEO of Mercedes-AMG GmbH.

Key data at a glance:

C 63 AMG Coupé Black Series
Displacement 6208 cc
Bore x stroke 102.2 x 94.6 mm
Compression ratio 11.3 : 1
Output 380 kW (517 hp) at 6800 rpm at 6800/min
Max. torque 620 Nm at 500 rpm
Engine weight (dry) 196 kg
Fuel consumption, NEDC combined 12.2 l/100 km*
CO2 emissions 286 g/km*
Acceleration 0-100 km/h 4.2 s*

*** Preliminarydata**

Arrow-shaped front section with large cooling air openings
It doesn't matter from which angle you're looking at it: the new C 63 AMG Coupé Black Series displays its ties with motorsport from every perspective. The arrow-shaped front section with the central Mercedes star in the radiator grille is the visual synonym for its unfettered forwards thrust. The air intakes in the striking front apron ensure reliable air flow through the large cooling modules. Two openings in the aluminium bonnet support the expelling of engine heat, whilst the struts positioned at an angle in the front apron emphasise the vehicle's width. The black front splitter located at the lower end helps to balance the vehicle aerodynamically.

The expressive design continues in the side view: the newly developed front axle with a greater track width calls for new wings, which have been widened by 28 millimetres on each side. "6.3" logos give a nod to the sheer power of the large-displacement eight-cylinder high-speed naturally aspirated engine beneath the bonnet. Air outlets intimated behind the wheel cut-outs call to mind powerful racing cars. The onlooker discovers a black strip on the restyled AMG side skirts – a look which continues the idea of the front splitter. On each side the rear wings have also been widened by 42 millimetres, due to the greater track width of the rear axle. Air openings are hinted at in front of the rear wheels, forming a fitting conclusion….

Employment Opportunity

ARUP

Oasys LS-DYNA Environment

For Information Contact : Carol.Lloyd@arup.com

Job Description	
Group	Technology Group
Job title	Software Developer
Job grade	**EDT 3 / 4**
Job brief / purpose	The main part of the job is writing software for the "Oasys LS-DYNA Environment", e.g. Primer. This software is sold commercially; the income from sales funds a continuous program of improvements and new releases. The software is an expert, niche product; it is the team's deep understanding of the needs of customers that gives the software its commercial edge. The post-holder will be expected to develop such understanding over time. The software development team sits within Advanced Technology & Research, performing a wide range of consultancy work based largely on numerical simulation.
Relationships	The post holder will liaise continuously with other members of the software development team who are working on the same products. The team is led by an Associate Director and a Director, with whom the post holder will be in daily contact.
Responsibilities	The post holder will take responsibility for particular functions within the software, including some new functions that the post-holder will develop, as well as contributing to the general development effort (e.g. debugging, testing, and contributing to the design of new features). The role also includes some customer support of the products with which the post holder is familiar.

Employment Opportunity

ARUP

Oasys LS-DYNA Environment

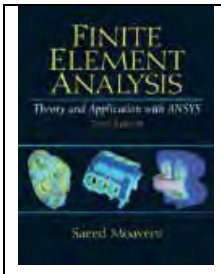
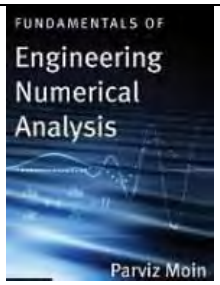
Scope	This post is newly created in response to growing sales and demand. Support will be given to achieve chartered status with an appropriate Institution. The post offers scope in the short term for increasing levels of responsibility within the software team. For example, responsibility for software releases, and for particular software products. There will also be opportunities to supervise junior staff, for example during testing, and there is the possibility of involvement in managing developers overseas. In the longer term, the specialist nature of the work does not constitute a barrier to promotion within Arup.
Contacts	The post-holder will have regular contact with other members of the AT&R Group within Campus, Japan, India and the USA and external clients who are users of the software. The post-holder will also have frequent contact with customers, for example answering support questions, and at meetings to understand customer needs.
Environment	The post is within the Advanced Technology & Research Group at the Arup Campus, a purpose-built office accommodation on the outskirts of Solihull, in the West Midlands, near junction 4 of the M42 and Widney Manor Station. The Campus is a non-smoking environment.

For Information Contact: : Carol.Lloyd@arup.com

Solutions

Available Books

Available From Amazon

	Finite Element Analysis Theory and Application with ANSYS (3rd Edition)		Arbitrary Langrangian-Eulerian and Fluid Structure Interaction.
	Isogeometric Analysis: Toward Integration of CAD and FEA		NURBS for Curve & Surface Design: From Projective Geometry to Practical Use
	A First Course in Finite Elements		Engineering Numerical Analysis
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Solutions

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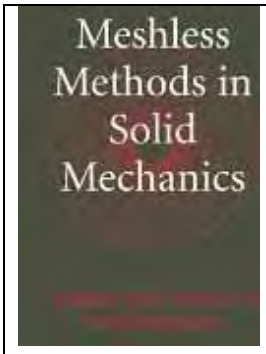
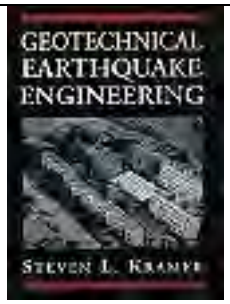
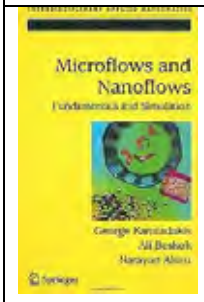
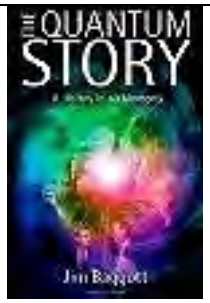
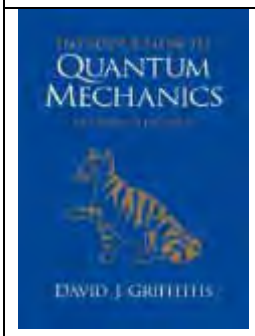
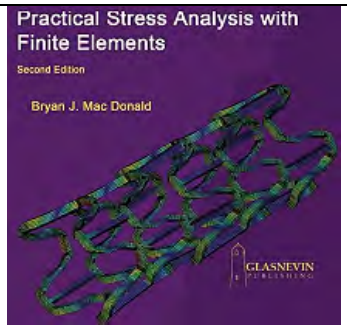
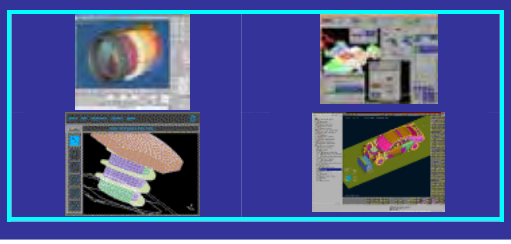
 [Meshless Methods in Solid Mechanics]	 [Principles of Geotechnical Engineering]	 [Geotechnical Earthquake Engineering]
 [Microflows and Nanoflows]	 [The Quantum Story: A History in 40 Moments]	 [The Quantum World: Quantum Physics for Everyone]
 [Introduction to Quantum Mechanics (2nd Edition]	 [Practical Stress Analysis With Finite Elements]	



Solutions

Pre-Processing
Post Processing
Model Editing

A preprocessor is a program that processes its input data to produce output. This data is then used as input to another program.

BETA CAE Systems S.A.

http://www.beta-cae.gr/

Provides complete CAE pre- and post-processing solutions. ANSA, the world wide standard pre-processor and full product modeler for LS-DYNA, with integrated Data Management and Task Automation. µETA, with special features for the high performance an effortless 3D & 2D post-processing of LS-DYNA results.

Engineering Technology Associates, Inc.

http://www.inventiumsuite.com

PreSys is an advanced Pre/Post Processor. PreSys is a full-featured, core solution that can be used on its own or with a variety of available add-on applications. The system offers advanced automeshing tools to provide the highest quality mesh with little CAD data preparation. It also features a scripting interface and model explorer feature for in-depth data navigation.

Oasys, Ltd

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

Oasys Primer is a model editor for preparation of LS-DYNA input decks. - Oasys D3Plot is a 3D visualization package for post-processing LS-DYNA analyses using OpenGL® (SGI) graphics.

JSOL Corporation

http://www.jsol.co.jp/english/cae/

JVISION is a general purpose pre-post processor for FEM software. Designed to prepare data for, as well as support, various types of analyses, and to facilitate the display of the subsequent results.

Livermore Software Technology Corporation

http://www.lstc.com

LS-PrePost is an advanced interactive program for preparing input data for LS-DYNA and processing the results from LS-DYNA analyses.

Solutions

Software

ETA – DYNAFORM & VPG

http://www.eta.com

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

http://www.eta.com

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.

OASYS software for LS-DYNA

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

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.

ESI Group Visual-CRASH For DYNA

http://www.esi-group.com

Visual-Crash for LS-DYNA helps engineers perform crash and safety simulations in the smoothest and fastest possible way by offering an intuitive windows-based graphical interface with customizable toolbars and complete session support. Being integrated in ESI Group's Open VTOS, an open collaborative multi-disciplinary engineering framework, Visual-Crash for DYNA allows users to focus and rely on high quality digital models from start to finish. Leveraging this state of the art environment, Visual Viewer, visualization and plotting solution, helps analyze LS-DYNA results within a single user interface.

BETA CAE Systems S.A.– ANSA

http://www.beta-cae.gr

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

http://www.beta-cae.gr

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

Solutions
Cloud Service
SGI
HPC Cloud Cyclone™

Complete Information can be found on the SGI Website including:

- Cyclone™ and LS-DYNA® Success Story
- IDC White Paper - Cyclone Supported Applications
- Cyclone Usage Diagram

http://www.sgi.com/products/hpc_cloud/cyclone/index.html

Cyclone™ is the world's first large scale on-demand cloud computing service specifically dedicated to technical applications. Cyclone capitalizes on over twenty years of SGI HPC expertise to address the growing science and engineering technical markets that rely on extremely high-end computational hardware, software and networking equipment to achieve rapid results. Cyclone supports a number of leading applications partners and five technical domains, including computational fluid dynamics, finite element analysis, computational chemistry and materials, computational biology and ontologies.

Two Service Models: Cyclone is available in two service models: Software as a Service (SaaS) and Infrastructure as a Service (IaaS). With SaaS, Cyclone customers can significantly reduce time to results by accessing leading-edge open source applications and best-of-breed commercial software platforms from top Independent Software Vendors (ISVs). The IaaS model enables customers to install and run their own applications.

LS-DYNA® Implicit Hybrid Technology on Advanced SGI® Architectures*

White Paper pdf format is at URL: http://www.sgi.com/pdfs/4231.pdf

Olivier Schreiber, Scott Shaw, Brian Thatch - SGI Application Engineering
Bill Tang, - SGI System Engineering

Information Solutions
FEA Participants

Site Directory

LS-DYNA On Demand Additional Core (cloud) Services

US	http://www.sgi.com/products/hpc_cloud/cyclone/index.html
Sweden **Germany**	http://www.gompute.com

LS-DYNA Information Sites

LS-DYNA Application/Capability	http://www.ls-dyna.com/
LS-DYNA LS-DYNA Benchmarks	http://www.topcrunch.org/
LS-DYNA Publications	http://www.dynalook.com/
LS-DYNA Consulting Companies	http://www.ls-dynaconsulting.com/
LS-DYNA Examples	http://www.dynaexamples.com/
LS-OPT Support	http://www.lsoptsupport.com
LS-OPT User Group	http://groups.google.com/group/lsopt_user_group
LS-PrePost Support	www.lstc.com/lspp
LS-DYNA Support	http://www.dynasupport.com/

ATD – Pedestrian – Barrier Models

ATD LSTC Models:	http:www.lstc.com/models
ATD LSTC Mailing List	atds@lstc.com
ATD Models - DYNAmore	http://dummymodels.com
Pedestrian Impact Model - ARUP	http://oasys-software.com/en/fe-models/pedestrian.shtml
Cellbond Barrier Models - ARUP	http://oasys-software.com/en/fe-models/barrier.shtml
RCAR Barrier Model - ARUP	http://oasys-software.com/en/fe-models/rcar.shtml

Information Solutions

Site Directory

Additional LS-DYNA Information Sites

High Strain Rate Testing of Advanced High Strength Steels	http://thyme.ornl.gov/ASP_Main/crashtests/crashtests_main.cgi
High Strain Rate Characterization of Mg Alloys	http://thyme.ornl.gov/Mg_new
(FEM) models of semitrailer trucks for simulation of crash events	http://thyme.ornl.gov/FHWA/TractorTrailer
Single Unit Truck crash model documentation	http://thyme.ornl.gov/FHWA/F800WebPage

Call for Papers / Announcement
June 3-5, 2012
Dearborn, Michigan, USA

12th International LS-DYNA® Users Conference

Livermore Software Technology Corp.

http://www.ls-dynaconferences.com

The 12th International LS-DYNA® Users conference will be held in Dearborn, Michigan, USA, June 3-5, 2012.

The conference will provide an ideal forum for LS-DYNA worldwide users to share technology. Providing a venue to learn new features, and applications of LS-DYNA, LS-OPT, LS-PrePost, LS-TaSC, LSTC Dummy and Barrier Models, as well as the many software and hardware alliances of LSTC's products.

All of our users from industry, research and academia are invited to present a paper.

The exhibition area hosts the latest software and hardware developments providing you the opportunity to speak directly with the company about their products.

Call For Papers

Application areas being accepted for submission:

- Aerospace
- Automotive Crashworthiness
- Ballistic/Penetraion
- Bimechanics
- Civil Engineering
- Compressible Fluid Dynamics
- Electro Magnetics
- Heat Transfer
- Impact/Drop Testing
- Manufacturing Processes
- Metal Forming
- Modeling Techniques
- Nuclear Applications
- Occupant Safety
- Seismic Engineering
- Ship Building
- Transportation
- Virtual Proving Ground

Paper Submission*

For submission details contact papers@lstc.com

Sponsorship

For sponsor and/or Exhibit booth information contact conference@lstc.com

Registration Fees*

Conference Only	$450
Training Only	$450
Conference/Training	$900

Hotel Accomodations

Conference attendees will be able to reserve a discounted room rate. Contact: conference@lstc.com

*The presenter of each accepted paper will receive free admission to the conference, provided that the presenter register for a room, at the Hyatt Regency, Dearborn under LSTC Conference registration

Suggested Post-Conferences Courses: Impact/Dummies & Barriers - Heat Transfer & hot stamping – ALE – EFG – SPH - Polymeric Material with LS-DYNA – Ballistics/Penetration – contact conference@lstc.com with questions/course requests.

Conference Venue

Hyatt Regency Dearborn
600 Town Center Drive
Dearborn, MI
48126-2793, USA
www.dearborn.hyatt.com

IMPORTANT DATES

Abstract Deadline
Nov. 11, 2011
Acceptance Notification
January 5, 2012
Final Paper Deadline
March 1, 2012

AGENDA

Sunday, June 3
Registration
Pre-Conference Seminars
Reception/Entertainment

Monday, June 4
Registration
Plenary Presentations
Keynote Presentations
Technical Sessions
Exhibit Area
Banquet/Entertainment

Tuesday, June 5
Registration
Exhibition Area
Presentations:

- John O. Hallquist
- Sponsors

POST CONFERENCES COURSES

Wed/Thurs June 6-7

Contact: conference@lstc.com
e-mail: papers@lstc.com **tel**: 925-449-2500 **Fax**: 925-961-0806
Livermore Software Technology Corp., 7374, Las Positas Rd, Livermore, CA 94551 USA

ENGINSOFT INTERNATIONAL CONFERENCE 2011

CAE Technologies for Industry

EnginSoft INTERNATIONAL CONFERENCE 2011
CAE Technologies for Industry
and ANSYS Italian Conference

Fiera Verona – Verona, Italy
20–21 October 2011

Call for Papers

Mark your diary for one of the most important events in the global CAE Calendar!

The 2 parallel Conferences present a wide range of Virtual Prototyping applications, with a large presence of both technical experts and business decision makers.

The event organizers welcome contributions which describe applications of CAE Technologies in:

- mechanics,
- computational fluid dynamics,
- electromagnetism,
- acoustics,
- structural engineering,
- optimization,
- manufacturing process simulation,
- durability, fatigue,
- crashworthiness,
- CAD/CAE integration

and for the industrial sector:

- from automotive to electronics,
- from aerospace/defense to the food and beverage industry

A unique occasion to promote your work.

Papers can be submitted on-line.

Deadline for abstract submission:
30th June 2011
Deadline for final paper submission:
30th September 2011.

Visit www.caeconference.com to plan your attendance, presentation and for more information about the exhibition.

Training Courses

CADFEM GmbH

The Complete Training Courses Offered Can Be Found At: http://www.cadfem.de
Please check the site for accuracy and changes.
Among the many course offering are the following:

Explicit structural mechanics with ANSYS Workbench and LS-DYNA

Beside the trainings on all aspects of short time dynamics we offer also various seminars on new methods available in LS-DYNA.

- Seminar: Introduction to explicit structural mechanics with ANSYS LS-DYNA and LSTC LS-DYNA
- Seminar: Material modeling with LS-DYNA
- Seminar: Simulation of composites with ANSYS Composites PrepPost and LS-DYNA
- Online-Seminar: Contact modeling with LS-DYNA
- Online-Seminar: Modeling joints with LS-DYNA
- Seminar: Crash simulation with LS-DYNA

optiSLang

Parametric simulation and optimization with optiSLang
optiSLang is one of the most popular solver for optimization and robust design analyses

Online-Seminar: Advanced parametric simulation with ANSYS Workbench and optiSLang

AnyBody

With AnyBody it is possible to simulate the kinematics of a human body like computing muscle forces for example.

- Seminar: Introduction to simulation of joint- and muscle- forces with AnyBody
- Seminar: Efficient coupling of AnyBody with ANSYS Workbench

Training Courses

Livermore Software Technology Corporation

The Complete Training Courses Offered Can Be Found At http://www.lstc.com
Training Coordinator: Cathie Walton Cathie@lstc.com

Start Date	Location	Course
08/01/11	CA	LS-PrePost (no charge with Intro to LS-DYNA)
08/02/11	CA	Intro to LS-DYNA
08/23/11	MI	Advanced ALE Applications
09/06/11	CA	Implicit
09/08/11	CA	Advanced Options in LS-DYNA
09/12/11	MI	LS-PrePost (no charge with Intro to LS-DYNA)
09/13/11	MI	Intro to LS-DYNA
09/19/11	CA	Contact in LS-DYNA
09/20/11	MI	LS-OPT

Courtesy Posting of Classes Offered by Paul Du Bois and Len Schwer:

Concrete & Geomaterials
10/4/2011 10/5/2011 Tue-Wed
Modeling & Simulation
10/6/2011 10/7/2011 Thurs-Fri
Blast Modeling
10/11/2011 10/12/2011 Tue-Wed
Penetration Modeling
10/13/2011 10/14/2011 Thurs-Fri

Training Courses

DYNAmore Nordic AB

LS-PrePost 3, introduction
September 12, 2011

LS-DYNA, introductory
September 13, 2011

LS-DYNA, Adv. training in impact analysis
September 20, 2011

LS-OPT, Optimization and robust design
October 4, 2011

LS-DYNA, implicit analysis
October 11, 2011

ANSA & Metapost, Introductory
October 25, 2011

LS-OPT, Optimization and robust design
November 14, 2011

Training Courses

Alliance Services Plus (AS+)

The complete Training Courses offered can be found at
http://www.asplus.fr/ls-dyna

Please check the site for accuracy and changes.

Among the many course offerings are the following:

Other regular courses (in Paris) …

LS-DYNA Unified Introduction Implcit & Explicit Solver
November 21-24

LS-OPT & LS-TaSC Introduction
October 19-20

Switch to LS-DYNA
October 5-6

Switch from LS-PrePost 2.X to 3.X
September 28
December 14

LS-DYNA Advanced Implicit Solver
September 27

LS-DYNA ALE / FSI
October 17-18

LS-DYNA SPH
November 8-9

LS-PrePost 3.0 – Advanced meshing capabilities
September 29
December 15

LS-DYNA User Options
to be announced

LS-DYNA – Plasticity, Damage & Failure – By Paul DU BOIS
October 3-4

LS-DYNA – Polymeric materials – By Paul DU BOIS
December 12-13

Training Courses

Shanghai Hengstar Technology Co. Ltd.

Email: info@hengstar.com
Phone: +86-021-61630122

2011	5	6	7	8	9	10	11	12
An Introduction to LS-DYNA(High Level)								
Crashworthiness Simulation with LS-DYNA								
Passive Safety and Restraint Systems Design								
LS-Prepost, LS-DYNA MPP, Airbag Simulation with LS-DYNA								
Pedestrian Safety and Passive Safety Simulation with LS-DYNA								
Crashworthiness Theory and Technology, Introduction of LS-OPT which is based on LS-DYNA								
Concrete & Geomaterial Modeling, Blast Modeling with LS-DYNA								
Frontal Restraint Systems according to FMVSS 208 and Euro NCAP								
Crashworthy Car Body disinterested, Simulation, Optimization								
Hot stamping with LS-DYNA								

Training Courses

ETA

http://www.eta.com for training dates and additional information

Introduction to DYNAFORM

Introduction to DYNAFORM for sheetmetal forming applications. Includes Die Face Engineering and Blank Size Estimation tutorials.

Duration: 2 day course

Using PreSys with NISA

An introduction to PreSys for finite element modeling and the NISA finite element solver. This course will teach the student how to use PreSys to create their finite element model, set up a NISA simulation and review the results of the simulation. Workshop problems will be used to demonstrate of the principles discussed in the course material.

Duration: 1 day course

Introduction to PreSys

An introduction to the PreSys software for finite element modeling and results visualization. This course provides the basics for creating finite element model from CAD data, property definition and analysis preparation and visualization of simulation results. Workshop problems will be used to demonstrate all of the principles discussed in the course material.

Duration: 1 day course

Introduction to LS-DYNA

This course is intended for the new user, or those who might like a refresher on the basics of creating, running, debugging and analyzing an LS-DYNA model. The course will be in a lecture/workshop format, with the user running example models and post-processing the results.

Duration: 2 day course

Please contact support@eta.com This e-mail address is being protected from spambots. You need JavaScript enabled to view it , call (248) 729-3010, or register online to reserve a seat at the desired training session. Space is limited, so please reserve a seat as early as possible.

LS-DYNA Users

Challenge
Your Knowledge

Question 1

The following question was sent by Uli Franz of DYNAmore – DYNAmore is headquartered in Germany. http://www.dynamore.de

You may answer the questions and write the answers in the boxes below. The LS-DNYA Keyword User's Manual will help you to succeed.

C	O	N	T	R	O	L	_																	
C	O	N	T	R	O	L	_																	
M	A	T	_																					
M	A	T	_																					
C	O	N	T	R	O	L	_																	
C	O	N	T	R	O	L	_																	

QUESTIONS

Line 1: In which card can you specify that a highly distorted shell element will be deleted if its Jacobian is negative?

Line 2: Where can you set a flag for additional NaN checks in the force and moment arrays?

Line 3: Which material in LS-DYNA has a hyphen in the name?

Line 4: What is the name of material 181?

Line 5: In which card can you switch bulk viscosity for shells on?

Line 6: What is the variable (flag) name to force the contact algorithms to take the initial penetrations during the simulation into account, instead of moving the nodes to a non-penetration position at the beginning of a simulation?

Line 7: In which card can you switch the time-stepping scheme?
E.g. from explicit to implicit?

Answer to Question #1

LS-DYNA Users

Challenge
Your Knowledge

ANSWER Question #1:

QUESTION BOX

C	O	N	T	R	O	L	_																			
C	O	N	T	R	O	L	_																			
M	A	T	_																							
M	A	T	_																							
C	O	N	T	R	O	L	_																			
C	O	N	T	R	O	L	_																			

Answers:

C	O	N	T	R	O	L	_	S	H	E	L	L														
C	O	N	T	R	O	L	_	S	O	L	U	T	I	O	N											
M	A	T	_	M	O	O	N	E	Y	-	R	I	V	L	I	N	_	R	U	B	B	E	R			
M	A	T	_	S	I	M	P	L	I	F	I	E	D	_	R	U	B	B	E	R	/	F	O	A	M	
C	O	N	T	R	O	L	_	B	U	L	K	_	V	I	S	C	O	S	I	T	Y					
I	G	N	O	R	E																					
C	O	N	T	R	O	L	_	I	M	P	L	I	C	I	T	_	G	E	N	E	R	A	L			

Question 2

LS-DYNA Users

Challenge Your Knowledge

DYNAmore GmbH

Carrying out a FE simulation using an explicit time integration method, one of the main issues for stability is the upper limit of the time step, the so-called critical time step. This critical time step depends on a characteristic length of the elements and the wave speed, which is determined by the density and the stiffness of the material. The limitation of the time step is also known as the Courant-Friedrichs-Lewy (CFL) condition.

It is a necessary condition to make useful simulations. You may check detail in literature or at:

http://www.dynasupport.com/tutorial/ls-dyna-users-guide/time-integration.

By default, the appropriate time step is determined by LS-DYNA automatically. In addition, LS-DYNA allows the user to modify the time step size with several parameters.

A. Please download the LS-DYNA input file beam.k
(http://www.dynasupport.com/links/fea-information-examples/beam.k)

B. Answer the following questions.

The exercise intends to explain the CFL condition and its application in LS-DYNA.

1.) Compute the critical time step of the beam and compare your result with the "smallest timestep" in LS-DYNA. Why is there a difference?

2.) How can you prompt LS-DYNA to output the analytical solution?

3.) Carry out a simulation, where DT2MS=-1.0E-3. Why is this time step not considered?

4.) How can you define a maximum time step size?

5.) What happens, if you carry out a simulation without mass scaling and TSSFAC=1.1?

Answer to Question #2

LS-DYNA Users

Challenge Your Knowledge

Solutions:

1a.) analytical:
dt=l*sqrt(density/youngs_modulus)=10.0*sqrt(0.785E-5/210.0)=0.19334E-02

LS-DYNA: dt=0.17372E-02

1b.) Scale factor for computed time step is by default TSSFAC=0.9

2.) Include *CONTROL_TIMESTEP keyword and define TSSFAC=1.0

3.) LS-DYNA chose the greatest possible time step and the computed critical time step is greater than the one defined via DT2MS.

4.) Define a load curve that limits the maximum time step size (*CONTROL_TIMESTEP, LCTM)

5.) Error termination due to "out-of-range (rotational) velocities" --> simulation gets unstable

Question 3

LS-DYNA Users

Challenge Your Knowledge

Quiz:

Taking a closer look on the material models in LS-DYNA, one can distinguish between two different kinds of material laws. On the one hand, one can find material laws, which relate stresses to strains. Keeping thereby in mind that there exist several stress and strain measures, care must be taken on the interpretation of force vs. displacement or stress vs. strain diagrams. For example, the basis for a parameter identification of an elastoplastic material model in LS-DYNA is typically a true stress true strain curve, cf. http://www.dynasupport.com/tutorial/computational-plasticity . On the other hand, there exist material laws, which relate directly forces to displacements or moments to rotations, respectively. These types of material laws are known as discrete material laws and require other element formulations in LS-DYNA, cf. the keyword *SECTION_DISCRETE or beam element form six.

Please download the LS-DYNA input file beam2.k (http://www.dynasupport.com/links/fea-information-examples/beam2.k/at_download/file) and answer the following questions. The exercise intends to give a better understanding of the above mentioned two classes of material formulations:

1. Take a look on the force vs. displacement relationship of the beam. Why can you find a nonlinear relation between these two variables, although an elastic material law is chosen? How can you check this?
2. Reference within the part keyword of the beam the material and section keywords with the id two. Carry out the simulation and take a further look on the force vs. displacement curve. Why is there a linear relation between these two variables now?
3. Define a further node at the origin of the coordinate system and replace the second node of the beam by this new node. Carry out a simulation and take a look on the force vs. displacement curve of the beam. Why can you observe no difference in comparison with the beam of finite length?
4. Take a look on the critical time steps of the discrete beams with and without a certain length. Why can you find the same value for both configurations?
5. Divide the mass of the beam in halves. What is the consequence for the critical time step?

Answer 3

LS-DYNA Users

Challenge Your Knowledge

Solutions:

1.) *MAT_ELASTIC provides a material formulation between true stresses and strains and not between engineering stresses and strains or forces and displacements. If you plot true stresses vs. strains, you will find the linear relation between them.

2.) Now a discrete material law is used, whereby the force is directly related to the displacement.

3.) As a discrete material law relates forces to displacements and not to strains, where generally the displacement is related to the length of an element, the resulting force depends only on the displacement between the two nodes of the beam element and not on the length between them.

4.) The critical time step of an element with a discrete material law is independent of the length of the element.

5.) The critical time step decreases. The critical time step of a element with an discrete material law depends on the mass and the stiffness.

Students

Formula One

If your University is working on a Formula One please consider listing it here. Send the information to mv@feainformation.com

Brigham Young University:

PACE Formula One Race Car Project begins a new year. The prior year was a success of many collaborative efforts. C. Greg Jensen, Professor, Mechanical Engineering, Brigham Young University and his students studied crash analysis and built a model. Among the collaboration Suri Bala led the LS-DYNA effort with his software, D3VIEW, an online collaboration tool for LS-DYNA projects

Last Year's Article http://www.lstc.com/pdf/a_pace_car.pdf

Slovak University of Technology

Stuba GreenTeam is a racing team representing Slovak University of Technology in Bratislava. Our goal is to develop, design and manufacture a racing, participate on Formula Student electric and take the challenge to compete other racing teams from all over the world. www.sgteam.eu -

North America

Finite Element Analysis Consulting - Consultants

LS-DYNA Consulting FEA Consultants

Canada

Metal Forming Analysis Corporation - MFAC -
Contact: galb@mfac.com

USA

Engineering Technology Associates, Inc
Contact: sales@eta.com

USA

SE&CS
Contact: len@schwer.net

USA

Predictive Engineering
Contact: george.laird@predictiveengineering.com

USA

CAE Associates
Contact: info@caeai.com

USA

AEG Product Engineering Services
Contact: support@engineering-group.com

USA

APACS Services Inc.
Contact: apacs@comcast.net

EUROPE

Finite Element Analysis Consulting - Consultants

LS-DYNA Consulting FEA Consultants

DENMARK	FaurConAps Contact: faurholdt@faurcon.com
FRANCE	ALYOTECH TECHNOLOGIES Contact: nima.edjtemai@alyotech.fr
FRANCE	ALLIANCE SERVICES PLUS Contact: v.lapoujade@asplus.fr
Germany	CADFEM GmbH Contact: ls-dyna@cadfem.de
Germany	DYNAmore Contact: uli.franz@dynamore.de
ITALY	EnginSoft SpA Contact: info@enginsoft.it
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Asia Pacific

Finite Element Analysis Consulting - Consultants

LS-DYNA Consulting FEA Consultants

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China	Shanghai Hengstar Technology Corp. http://www.hengstar.com
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JAPAN	LANCEMORE Contact: info@lancemore.jp
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LSTC
Mailing List For
Models News

The LSTC Models Development Team has decided to formalize the procedure of distributing news about LSTC's models in order to handle the increased number of recipients.

Previously, you have received news about LSTC's models, via direct e-mails from Sarba Guha. The previous mailing list was retired, as of the first invitation to the new mailing list.

If you arel interested in receiving the LSTC Models News:

1. **Subscribe** to this new mailing list at the following website:

   http://listserv.lstc.com/mailman/listinfo/lstc_models_news

2. **Receive:** You will receive an e-mail from the mail program
   with the following sender address:
   [lstc_models_news-request@listserve.lstc.com]
   with the subject line
   "confirm" and an alpha-numerical code.

3. **Confirm:** Per the instructions in that e-mail, please confirm your e-mail address

4. **Address Book:** To ensure receipt of emails from LSTC Models News, add
   [lstc_models_news@listserv.lstc.com]
   to your address book or safe list

5. **Confidentiality:** Your e-mail address will not be distributed outside of LSTC
   and only used for the LSTC Models News.

Thank you for your interest in our products!

Best regards, LSTC Models Development Team

News Release

SGI

http://www.sgi.com/company_info/newsroom/press_releases/2011/july/swinburne.html

Swinburne University of Technology Selects SGI to Accelerate Astrophysics Research - Hybrid CPU- and GPU-Based System Will Serve as National Facility for Astronomers

Fremont, Calif. — July 13, 2011 — SGI (NASDAQ: SGI), a trusted leader in technical computing, today announced that the Swinburne University of Technology in Melbourne, Australia, has selected an SGI® Rackable™ and Altix® UV 10 high performance computing (HPC) solution to accelerate the study of astrophysics for astronomers, students and other researchers.

The chosen solution consists of 69 Rackable C3108 computer servers and four Altix UV10 systems as large-memory nodes with over 975 total processor cores built with both Intel® Xeon® processor 5600 series and E7 product family and NVIDIA® Tesla™ C2070 and M2090 GPUs. The networking technology connecting the systems is a Qlogic QDR Infiniband non-blocking network. For storage, the solution has 13 SGI IS5000 storage arrays, providing 1.8PB of Lustre storage. This phase of the system, known as gSTAR for GPU Supercomputer for Theoretical Astrophysics Research, will have a direct link to the Australia Telescope National Facility (ATNF) in Parkes, NSW, to process telescope data outputs.

"This new SGI system will deliver more than 130 teraflops of computing power, making it over 10 times more powerful than the Green Machine, our existing supercomputer," said Dr. Jarrod Hurley, manager of Swinburne's supercomputer. "This addition opens many new avenues for cutting edge simulations and rapid processing of telescope data."

"The interest in combining CPU and GPU processing in HPC solutions is increasing," said Bill Mannel, vice president of product marketing at SGI. "It's critical that research institutions such as Swinburne have the ability to quickly and accurately capture, process and share this kind of data."

The first phase of the system is expected to be operational in September 2011, and will be housed in Swinburne's new Data Center. Phase two of the project, which will focus primarily on CPU-based compute nodes, is expected to be completed by early 2012.

About SGI: SGI, a trusted leader in technical computing, is focused on helping customers solve their most demanding business and technology challenges. Visit www.sgi.com for more information.

Contact Information: Ogilvy Public Relations, Analisa Schelle, 415-677-2721, SGIPR@sogilvyr.com

Highlights

2011

April	LS-TaSC™ Version 2 - Topology Design using LS-DYNA® **LS-**Dyna - **T**opology **A**nd **S**hape **C**omputation
May	Release of LS-OPT® Version 4.2
May	LS-PrePost Update
June	AVI Showcase – rubber powered airplane propeller using *MAT_OGDEN_RUBBER **AVI: Rubber_Plane.avi 2.86MB** LANCEMORE Corp. Tokyo, Japan