

# HyperWorks@Uni

YOUR ACADEMIC PROGRAMME NEWSLETTER

Altair® HyperWorks® is A Platform for Innovation™

Issue 4  
2010

**HTC 2010** 4th European HyperWorks  
Technology Conference

Coventry University's Christophe Bastien to present:  
**"HyperWorks: The Industrial Standard  
Toolset for Academia"**

at Europe's leading virtual design conference

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[www.altairhyperworks.co.uk](http://www.altairhyperworks.co.uk)

## IT ALL ADDS UP WITH HYPERMATH! THE NEW MATHEMATICAL ANALYSIS TECHNOLOGY

The HyperWorks suite of virtual simulation solutions continues to grow and the latest version brought with it a new mathematical analysis technology in the form of HyperMath.

HyperMath is a general purpose numerical computing environment that allows students to easily develop and perform custom mathematical operations on various types of data, including data associated with computer aided engineering (CAE) pre and post-processing as well as interfacing with other mathematical codes. This new software technology includes a powerful and flexible programming language, comprehensive math and utility libraries, an integrated code development environment, data visualisation and direct support of common data formats. Students that already have access to the latest version of HyperWorks can try HyperMath straight away, a range of video and online training is available to assist the student develop a range of mathematical analysis capabilities.

### Benefits of HyperMath to Universities

#### Rapid Code Development

- A comprehensive set of tools enable rapid development of custom numerical code
- Access to a broad set of math libraries and utilities covers a wide range of needs
- Easy diagnosis of code through interactive debugging reduces development effort

#### Robust & Visual Code Development

- Interactive debugging of code via Altair ScriptView provides for streamlined troubleshooting of coding errors without the need to embed diagnostic statements or code

#### Easy CAE Data Access

- Built-in suite of CAE data and results readers to provide fast access to a large set of data formats for pre and post-processing needs
- Data can be exported to various formats for easy import in HyperWorks or other third party products

#### Enhanced Process

- Direct integration with other HyperWorks products and its open nature allows HyperMath to participate in existing processes and scripts

**HyperMath is available now at no extra cost to all Universities using HyperWorks**

HyperMath  
Video Demos  
are Online  
Now!



## 2010 EUROPEAN HTC CONFERENCE ANNOUNCED - OCT 27-29, FRANCE

Altair is pleased to officially announce the date and location for the 4th European HyperWorks Technology Conference (HTC). The premier event for Driving Innovation with Enterprise Simulation will take place on October 27-29, 2010 in Versailles, France at the 'Palais de Congres'.

The 4<sup>th</sup> European HTC will bring together 500+ attendees across European industry and academia to highlight the latest trends, developments and applications in the field of enterprise computer aided engineering (CAE). Over the three days, industry speakers including Airbus, Bombardier, Eurocopter, Nissan, Fiat, PSA and Renault will showcase cutting-edge methods, applications and industry examples of CAE-driven innovations.



This year's event will contain a presentation from Christophe Bastien, Programme Manager and Senior Lecturer at Coventry University. He will demonstrate how the HyperWorks suite has been successfully integrated into the research and teaching programmes of a leading engineering institute in his presentation:

### **"HyperWorks - The Industrial Standard Toolset for Academia"**

*Abstract: The paper will discuss the implementation of HyperWorks in an Activity Led Learning teaching environment, which is the backbone of the future teaching philosophy at Coventry University.*

Find out more about this event and register for free at:  
[www.altairhtc.com/europe](http://www.altairhtc.com/europe)

## HYPERWORKS AT THE NAFEMS 2010 UK CONFERENCE

Altair participated at the NAFEMS 2010 UK Conference that took place in Oxford, 6th and 7th of June. HyperWorks RADIOSS was presented at the event and a Altair HyperWorks stand was present in the exhibition area. Attendance was high and there were representatives from every FEA field of application.

NAFEMS is an independent not-for-profit body with the sole aim of promoting the effective use of engineering simulation methods such as finite element analysis, multi-body system dynamics and computational fluid dynamics.



Altair is also part of the Educational and Training Working Group (ETWG), which is formed to examine the education and training needs for all numerical analysts and to provide information and documents to satisfy these needs. This collaboration demonstrates the commitment of Altair towards the use of finite element analysis technology in every area of technical development. In this line, Altair presented its latest development in crash analysis computation.

For more information regarding NAFEMS, please follow the link below:  
[www.nafems.org](http://www.nafems.org)

## Webinars

A selection of informative, industry focused webinars demonstrating how Hyperworks can assist in the design of World leading products.

### **AUTOMOTIVE**

**Optimizing vehicle suspension design & analysis**

**Advancing the NVH analysis process with RADIOSS**

**Improving vehicle crash & safety performance with HyperWorks**

### **AEROSPACE**

**Structural Impact Simulation in Aerospace**

**Innovative Solutions for Today's Aerospace Challenges**

**Optimization-driven Design of Composite Laminates**

**Modern FE Modeling of Aero-Structures**

### **ELECTRONICS**

**Accelerating the Product Development Process for the Electronics Industry**

### **RAIL**

**An Introduction to Virtual Simulation Technology to Enhance Rail Vehicle Design**

### **MARINE**

**Cut CAE Modeling Time for Ship Hull Structures By 50%**

### **MEDICAL**

**Advanced Simulation & Optimization in the Medical Device Industry**

## UNIVERSITY OF NOTTINGHAM - TEXGEN WORKSHOP

In March, Altair was invited to participate in the TexGen Workshop that took place in Nottingham. There was a variety of industries represented at this event. TexGen is open source software developed at the University of Nottingham for modelling the geometry of textile structures. TexGen has been used by the Nottingham Composites Group as the basis of models for a variety of properties, including textile mechanics, permeability and composite mechanical behaviour.

During the workshop, textile structures were constructed in order to demonstrate the capabilities of TexGen. TexGen textile models can be used in conjunction with many software packages with the purpose of analysing weaving structures.



As a result of this workshop, there is a tutorial in the HyperWorks University Programme web page covering the use of TexGen for generating a weave structure and its subsequent analysis using HyperWorks. The link below will direct you to this tutorial:

[www.altairhyperworks.co.uk/academic/students\\_tutorial.htm](http://www.altairhyperworks.co.uk/academic/students_tutorial.htm)

For more information regarding TexGen, please follow the link below:  
[http://texgen.sourceforge.net/index.php/Main\\_Page](http://texgen.sourceforge.net/index.php/Main_Page)

## HYPERWORKS AT NEWCASTLE UNIVERSITY, SCHOOL OF MARINE SCIENCE AND TECHNOLOGY

The School of Marine Science and Technology is the largest and broadest-based marine school in the UK, covering the fields of marine engineering, marine biology, naval architecture, offshore engineering, coastal management and small craft technology, and enjoys a substantial international reputation.

The School's current research areas include marine and offshore structures and materials; surface and underwater robotic systems; marine environmental sustainability and safety; marine innovative design and manufacturing processes; marine informatics and control; marine hydrodynamics and propulsion; marine biofouling/antifouling; marine chronobiology; marine invertebrate reproduction; and marine aquaculture



*Dr. Jonathan Downes and Daniel Nieto at the School of Marine Science & Technology*

In 2008 the School of Marine Science and technology established the Newcastle University Marine International (NuMI) with the opening of its first overseas campus located at the Ngee Ann Polytechnic, Singapore providing high-quality taught programmes to new overseas students. Altair's visit was within the frame of the University Programme support activities in order to cover the needs of software in the School of Marine Science and Technology. To find out more about the school, please visit: [www.ncl.ac.uk/marine](http://www.ncl.ac.uk/marine)

## TRAINING COURSES

### Develop Your Skills

Here are upcoming HyperWorks training courses.

For more details on these courses, to obtain a full schedule or to inquire about customised onsite training, call us on 01926 468 600

### LEAMINGTON SPA

#### Basic Finite Element Analysis (FEA)

On demand

#### Essentials of Pre- and Post-Processing with HyperWorks

August 3 - 4

#### Solver Interfaces

On demand

#### Metal Forming Simulation using HyperForm

September 21

#### Extrusion, Moldfilling, Forging and Friction Stir Welding

On demand

#### Multi-body Dynamics with MotionView and MotionSolve

August 17 - 18

#### Generating Robust Designs with HyperStudy

September 16

#### Design Optimisation using OptiStruct

September 14 - 15

#### Crash and Impact Simulation Using RADIOSS & HyperCrash

August 10 - 11

#### RADIOSS Linear

August 8

#### Formability of Sheet Metal

On demand

#### PBS Professional for Workload Management

August 31 - September 1

### ADVANCED COURSES

#### Designing for Composite Material

On demand

#### Advanced Analysis with RADIOSS Linear

On demand

#### Noise, Vibration & Harshness

On demand

#### Vehicle Closures Modelling

On demand

## COVENTRY UNIVERSITY AT THE SHELL ECO MARATHON COMPETITION

Coventry University is again participating in the Shell Eco marathon 2010 Competition, at both UK and European levels. This time round the Shell Eco-marathon Europe took place in Lausitz, Germany during May this year and Coventry University was ranked the second best UK entry. The prototype achieved a record **981 mpg, 308 mpg more than last year**. Coventry University also participated in the Shell Eco-marathon Youth Challenge UK taking place at Rockingham Race Circuit during June.

Altair is sponsoring the student team providing software and technical expertise. As in the past, HyperWorks is used extensively during the design stages of the eco car. OptiStruct, HyperWorks' optimisation engine is also a key tool in order to optimise structural components in the car. An Altair HyperWorks representative was present during the first day of the UK competition to support Coventry University.



Academic Leader Christophe Bastien & Daniel Nieto in the paddock area at Rockingham Race Circuit

Worldwide, Altair is sponsoring a number of academic activities aiming to design and develop cleaner and more efficient cars. For example, HyperWorks is used by the University of Michigan in the North America Solar Challenge, where the team has finished 1st for the third consecutive year. For more information regarding the Shell Eco-marathon competition, please visit: [www.shell.com/home/content/ecomarathon](http://www.shell.com/home/content/ecomarathon)

For more information regarding the North America Solar Challenge, please visit: [www.americansolarchallenge.org/events/asc2010](http://www.americansolarchallenge.org/events/asc2010)

## ALTAIR IN THE NEWS

### **OHB Technology AG Chooses HyperWorks as Standard CAE Development Platform**

May 10, 2010

### **Altair Smashes Full-Vehicle Crash Simulation Time Barrier: CAD-to-Results in Less Than 24 Hours**

April 27, 2010

## REGISTER TODAY

If you are new to this site or have not registered as an Insider user, we invite you to complete a brief sign-up form. As a registered user, you will have access to other support resources, including documentation, tutorials, software updates and macros. You will also have access to the iExchange message board.



Be Part of the Altair Client Community Online

LOGIN REGISTER

Login to Altair Client Center online

## ADDITIONAL HYPERWORKS MACROS

### **rbeFromEdge.tcl:**

Rigid Spider for Washer Layers

[Download](#)

### **duplicate\_pressures.tcl:**

Find Duplicate/Multiple Pressures

[Download](#)

### **duplicate\_temps.tcl:**

Find Duplicate/Multiple Temperatures

[Download](#)

## SUPPORT TIPS & TRICKS

Query corner stress on selected nodes

[Download](#)

Creating contact surfaces and interfaces for RADIOSS Bulk Data format

[Download](#)

## TUTORIALS

Every month, we will post a new HyperWorks tutorial, freely available for all students & teachers using the software. Each download contains an engineering task based on real world design problems and includes ready to use HyperWorks model files to explore and edit as you like.

### **This month's tutorial:**

'Flexible Body Generation – Component Mode Synthesis'

[Download](#)



Our latest magazine - out now **SUBSCRIBE FREE**

## Supporting Student Competitions

In support of a new generation of engineers, Altair is pleased to sponsor UK Universities with up to 3 seats of the full HyperWorks virtual design suite for free when used on a recognised student competition. Students involved in Formula Student, the Shell Eco-Marathon, SAUC-E and more now have the opportunity to leverage the latest HyperWorks tools to reduce design time, minimise vehicle weight and maximise performance. Equip you students with the industry leading CAE suite for free and give them an unfair advantage!

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