

I herewith register for the seminar:

- "Introduction to Passive Safety Simulation with LS-DYNA", 10-11 March 2016, Stuttgart, Germany
 Industry: 950 € Research institution: 475 €
 Student: free of charge, if there are vacancies
- "CPM for Airbag Modeling",
 18 March 2016, Stuttgart, Germany
 Industry: 450 € Research institution: 240 €
 Student: free of charge, if there are vacancies
- I will cancel my registration if the seminar will be held in German language.

Sender

First name: _____

Last name: _____

Company/University: _____

Dept.: _____

Street: _____

Zip-code, city: _____

Phone: _____

Fax: _____

E-Mail: _____

Date, Signature: _____

Please complete and fax to +49(0)711-459600-29, send to DYNAmore GmbH, Industriestr. 2, D-70565 Stuttgart, Germany, or e-mail to seminar@dynamore.de.

All prices plus VAT.

Online registration at www.dynamore.de/seminars

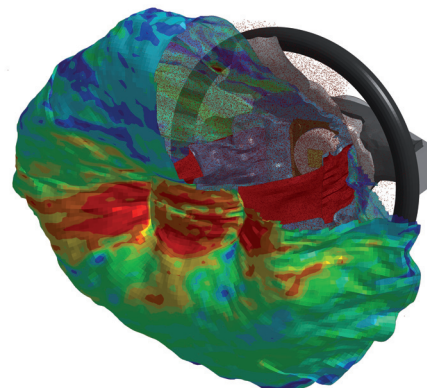
LS-DYNA

LS-DYNA is one of the world's leading finite element software systems and is perfectly suited to perform numerical simulations of highly nonlinear problems encountered in industry and research. Typical applications include crashworthiness, metal forming, impact and drop tests, detonations, penetration/perforation and fluid-structure interaction as well as thermomechanically and electromagnetically coupled problems.

With LS-DYNA, the Livermore Software Technology Corporation (LSTC) offers a well-equipped toolbox that includes explicit and implicit time integration schemes and spatial discretization methods such as FEM, BEM and ALE as well as meshfree methods like EFG, SPH and DEM. The primary focus of the developers at LSTC lies on the one code strategy to integrate different solution algorithms within a single software environment which includes coupling abilities of the structural solver with the solvers for incompressible and compressible fluids, temperature and electromagnetism.

This allows different simulation stages to be joined together within LS-DYNA without the need to define a time-consuming transition to other software packages. And this in turn means that LS-DYNA can be used to efficiently perform simulations across multiple processes.

Besides LS-DYNA and LS-OPT, LSTC also develops the free pre- and postprocessor known as LS-PrePost. The programs support the Linux, Windows and Unix operating systems as well as various cluster architectures and HPC systems.



Courtesy of Daimler AG

DYNAmore GmbH

DYNAmore is dedicated to support engineers in solving nonlinear mechanical as well as multiphysical problems numerically. Our product portfolio includes the finite element solver LS-DYNA, the pre- and postprocessor LS-PrePost and the optimization software LS-OPT as well as numerous finite element models needed for crash worthiness simulation (dummies, barriers, pedestrian and human models, ...). Our main field of activity is to sell, teach, support, and co-develop the software LS-DYNA and LS-OPT. In addition, we provide engineering services for numerical analysis and integrate simulation software in your CAE environment.

Our advanced training offer includes classical seminars, workshops, webinars, support and information days as well as LS-DYNA user conferences. More detailed information can also be found on our support and tutorial websites: www.dynasupport.com and www.dynaexamples.com.

We are one of the first addresses for pilot studies and development projects with respect to the simulation of nonlinear dynamic problems. We are always at your disposal to answer your questions on specific applications as well as test licenses.

You will find DYNAmore in Stuttgart, Dresden, Ingolstadt, Berlin, Langlingen, Zürich (CH), Linköping (S), Göteborg (S), Turin (I) and Versailles (F).

Organization

Venue
 DYNAmore Headquarters
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 D-70565 Stuttgart
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 Fax +49 (0)711 - 459600 - 29
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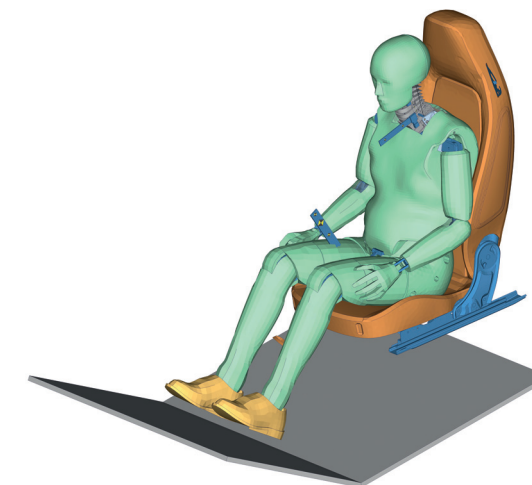
Registration

For your registration please use the registration form, send an email with details to seminar@dynamore.de or use the online registration links which are provided in the seminar description.

Invitation to the seminars:

Passive Safety Simulation and CPM for Airbag Modeling

Stuttgart, Germany



Courtesy of Daimler AG

Introduction to Passive Safety Simulation with LS-DYNA

10 - 11 March

CPM for Airbag Modeling

18 March

Declaration of consent to the use of personal data:

With your registration you allow us the use and the processing of your data for the seminar organization and promotional purposes. You may, at any time, revoke your consent by contacting DYNAmore GmbH via phone or in writing.



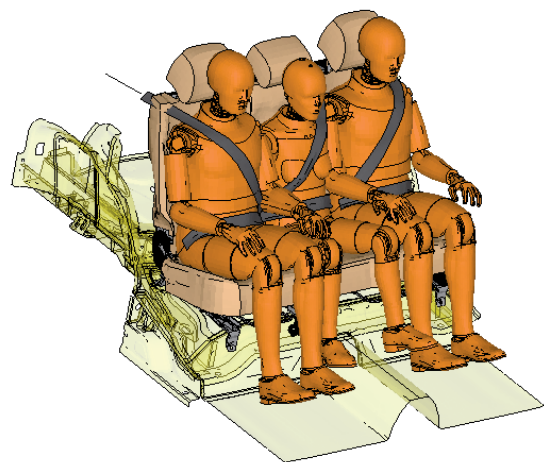
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Introduction to Passive Safety Simulation with LS-DYNA

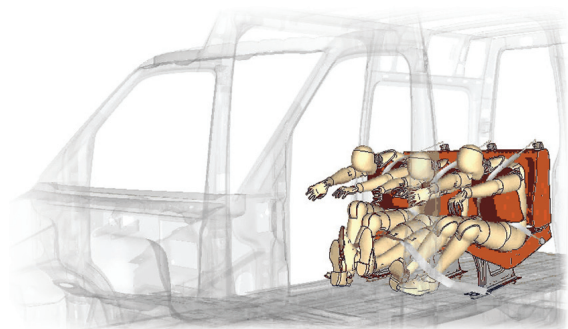
Particularly due to the growing amount of relevant legislation and consumer tests as well as new technological developments, the field of occupant safety in vehicle technology has become more important and also gained in complexity. The goal of this seminar is to present the most important features of LS-DYNA with respect to occupant safety simulations. Moreover, insights are provided on how to deal with the various components involved, such as airbags, seatbelts, crash-test dummies and seats. During this training, particular emphasis will be laid on modeling methods for practical application.

The seminar will provide an overview of state-of-the-art airbag models and describes the fundamentals regarding the composition of an LS-DYNA occupant safety simulation, including the positioning and fitting of seatbelts to the dummy and the definition of recommended contacts between the safety systems.

This seminar is mainly designed for beginners working in the field of occupant safety (especially dealing with side, frontal and rear impact). During the event, attendees will be given the opportunity to apply their acquired knowledge in sample exercises.



Courtesy of Faurecia Autositze GmbH



Courtesy of Daimler AG

Contents

- Overview of current impact load cases: side, frontal, rear crash
- Available dummy models in LS-DYNA, and their validation methods
- Materials, elements and connections used for occupant safety simulations
- Overview of composition and usage of safety-relevant vehicle components: seat, interior, airbags, body-in-white modeling
- Usage of dummies
 - Overview of positioning methods
 - Positioning inside the vehicle
- Seating of dummies
 - Prestress in seating foam
 - Signal evaluation
 - Injury criteria
- Usage of seat belts
 - Modeling seat belts, belt diverter and pretensioner
 - Tighten seat belt for the dummy
- Evaluation of the results
 - Dummy signal evaluation
 - Injury criteria
- Example of a modular occupant safety model
 - Appropriate composition and structure
 - Contact between components

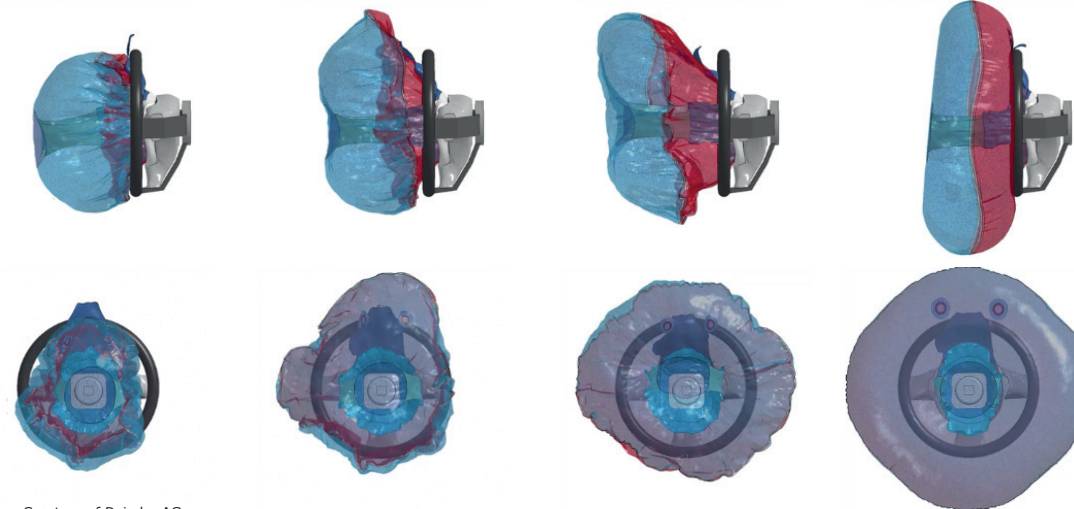
Date: 10 - 11 March, 9:00 AM - 5:00 PM
 Fee: 950 € (475 € for research institutions) students free of charge, if there are vacancies
 Venue: DYNAMore Headquarters Stuttgart, Germany
 Language: On demand - English or German
 Registration: www.dynamore.de/insassen

CPM for Airbag Modeling

Airbags are one of the most important components of a motor vehicle occupant protection system. In addition to standard airbags for the driver and front passenger, an increasing number of specialized airbag variants such as curtain airbags, kneebags, etc. are used. Each airbag must be specifically designed and optimized for its intended purpose. A sensible and comprehensive simulation that captures the behavior of airbags as part of a simulation of the entire restraint system is essential.

This course illustrates the basics that are required to set up an airbag simulation in LS-DYNA. Starting from the simple uniform-pressure (UP) approach for airbag deployment, the seminar will focus on the more recent corpuscular method (CPM). The CPM is based on a particle method and due to its accuracy and numerical efficiency it has been successfully applied to out-of-position (OoP) load cases. At this time, the CPM represents the state of the art airbag modeling technique in LS-DYNA for occupant load cases.

Apart from the deployment technology per se, the seminar also addresses other influencing factors like contact settings, discharge opening and porosity parameters. Moreover, as the material behavior also has a significant influence on the deployment kinematics, some of the latest implementations in LS-DYNA with respect to material definitions are discussed.



Courtesy of Daimler AG

Contents

- Introduction to the topic
- Fundamentals of airbag simulations
- Uniform-pressure method
 - Wang-Nefske formulation and hybrid inflators
 - Possibilities and limits of UP deployment calculations
 - Jetting definition for UP airbag models
 - Surrogate models for discharge openings
- Model composition
 - Keywords to define UP and CPM Airbags
 - Definition of a reference geometry
 - Possibilities for material definitions (nonlinearities, porosity and validation)
 - Discussion of tank tests and airbag validation
 - Presentation of the process chain for model configuration
 - Postprocessing of results
- Corpuscular method
 - Basic theoretical aspects
 - Application of the method in LS-DYNA
 - Merits and limits of the methodology
 - Comparison to the uniform-pressure approach
- Examples

Date: 18 March, 9:00 AM - 5:00 PM
 Fee: 475 € (240 € for research institutions) students free of charge, if there are vacancies
 Venue: DYNAMore Headquarters Stuttgart, Germany
 Language: English
 Registration: www.dynamore.de/cpm