LS-DYNA ALE ADVANCED APPLICATIONS TRAINING SEMINAR

Class Dates: Mar 23, 24 & 25, 2010 (Tue, Wed & Thu)

Class Location: Livermore Software Technology Corporation
7374 Las Positas Road, Livermore, CA 94551

Registration: Jane Hallquist, phone: 925-245-4572, email: jane@lstc.com

Instructor: Ian Do, Ph.D. (ian@lstc.com)

Course Objective

This application oriented seminar is to help users already familiar with LS-DYNA (and the ALE method) get more proficient at using the more complex features of ALE and fluid-structure interaction (FSI) modeling.

This is a ~2.5 day seminar. Day 1 is for reviewing some critical ALE features, FSI usage & basic concepts. In the remaining time more complicated examples are discussed. Simulation techniques for each model will be discussed. We will also discuss model fine-tuning and procedures for debugging models, such as ways to deal with FSI leakage. Boundary and initial conditions, mesh resolution design, etc. will also be covered. This is a hands-on training class.

A range of possible LS-DYNA ALE-FSI examples is shown below covering a wide area of applications. However, there will not be enough time to cover all listed examples. So depending on the interests of the attendees, the instructor will select some examples in the list below and discuss them in detail. Please indicate the examples that are of interest to you upon registration so they can be prepared. All input files to models discussed will be made available to the attendees so that they can review them at their convenience. Attendees are expected to conceptually construct the models discussed.

LIST OF POSSIBLE APPLICATIONS EXAMPLES …

Basic Concepts (1 day):

(01) Introduction
(02) ALE Multi-Material Group (AMMG) concepts and applications
(03) Fluid-Structure Interaction (FSI) concepts
(04) Initial and boundary condition set up with ALE element formulation (ELFORM=11)
(05) Material failure modeling
(06) Information on typical unit systems and references

ALE Modeling

(11) Soda can drop
(12) Tank sloshing and impact
Extrusion
Porous coupling – parachute model
Bird strike fan blade assembly model
Projectile-target penetration modeling

**Naval structure FSI**

Hydrostatic pressure initialization
Wave impacting floating “ship” (simple model)
Cylinder (Rocket booster) impacting water model
Bubble collapse (underwater FSI on submerged structure) *

**Detonation-related (optional)**

Explosively-Formed Projectile penetrating a concrete slab (artificial data for concrete)
Detonation in confined structure
Detonation under structure

* Some advanced features required currently under development and may not be available.