



Livermore Software Technology Corp.

Locations:

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Smoothed Particle Hydrodynamics in LS-DYNA

Instructors: Dr. Mhamed Souli or Dr. Edouard Yreux

2 Days - \$400 Students \$200 w/student ID

Includes on-site continental breakfasts, lunches, breaks, class dinner

Includes 30-day LS-DYNA demo license to practice

Description: The objective of this SPH class is to provide engineers and researchers with the fundamental theoretical background on the SPH formulation, and its application to different industrial problems in defense, aerospace, automotive and consumer products. The class will emphasize on which SPH formulation is suitable for various applications including fluid and solid materials.

To illustrate different SPH features, the class includes a workshop with around 30 LS-DYNA input examples covering all keywords and contact entities. Contact between SPH and FEM parts and also between different SPH parts will be illustrated in 3D, 2D, and 2D axisymmetric. A workflow for setting up an SPH problem in LS-PrePost will also be discussed.

Attendees will use training room computers to complete workshop example problems that illustrate the points made in the lectures.

Course Contents:

- SPH formulation fundamentals
 - History of the Method, Variable Smoothing Length
 - Spatial Discretisation of Continuum Equations, Characteristic Lengths
 - Kernel Functions, Method Consistency, Concept of Renormalization
 - Lagrangian, Eulerian Forms of SPH, SPH/Lagrangian Coupling

- Practical examples of SPH and SPH/Lagrangian coupling
 - General Capabilities/Applications
 - Details of an Example: Control Input, Material, Sections, Parts, Outputs
 - Boundary Conditions, Contacts, SPH/Lagrangian Coupling Options
 - LS-PrePost: Creation of SPH Particles, Visualization of SPH Particles