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Rubber, Foam, and Viscoelastic Materials in LS-DYNA

Instructor: Dr. Ala (Al) Tabiei atabiei@lsdyna-online.com

2 Days - $1,250 Students $625 w/student ID
Includes on-site continental breakfasts, lunches, breaks, class dinner
Includes 30-day LS-DYNA demo license to practice

Description: This is a short course on using LS-DYNA to solve problems that involve rubber, foam, and viscoelastic materials. This class will provide analysts with the additional tools and knowledge required to model such materials. Examples are used to illustrate the points made in the lectures and train engineers on using the code.

Course Contents:

Introduction: Rubber

Experimental Characterization

Material Models for Rubber in LS-DYNA

7 Blatz-Ko Rubber
27 Mooney-Rivlin Rubber
31 Frazer-Nash Rubber
77_H Hyperelastic Rubber
77_O Ogden Rubber
87 Cellular Rubber
127 Arruda Boyce Rubber
181 Simplified Rubber/Foam
183 Simplified Rubber with Damage

Material Data & Behavior Demonstration

Concluding Remarks

Introduction: Foam and Viscoelastic Materials

Experimental Characterization

Material Models for Viscoelesticity

*MAT_VISCOELASTIC (*MAT_6)
*MAT_KELVINMAXWELL_VISCOELASTIC (*MAT_61)
*MAT_GENERAL_VISCOELASTIC (*MAT_76)

Material Models for Foam in LS-DYNA

5 *MAT_SOIL_AND_FOAM
26 *MAT_HONEYCOMB
38 *MAT_BLATZ-KO_FOAM
53 *MAT_CLOSED_CELL_FOAM
57 *MAT_LOW_DENSITY_FOAM
62 *MAT_VISCOUS_FOAM
63 *MAT_CRUSHABLE_FOAM
73 *MAT_LOW_DENSITY_VISCOUS_FOAM
75 *MAT_BILKHU/DUBOIS_FOAM
83 *MAT_FU_CHANG_FOAM

Material Data and Behavior Demonstration

Concluding Remarks