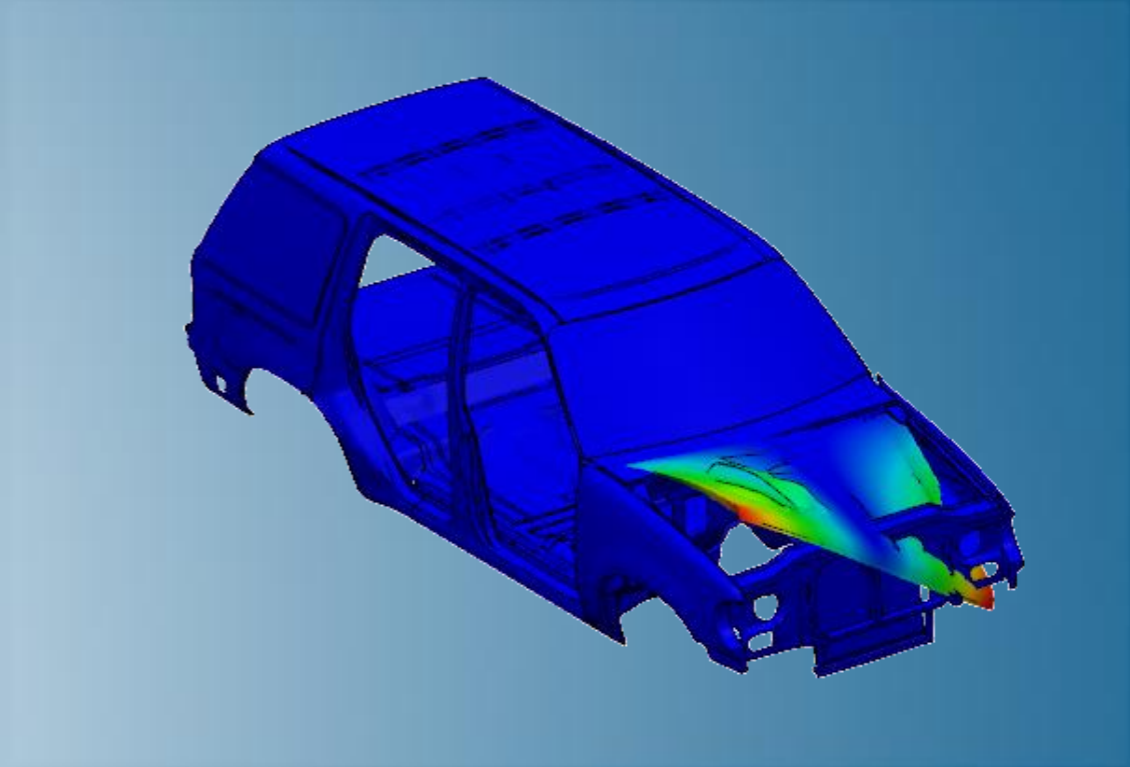


Linear Dynamics Scenario Creation Essentials

R2017x



3DEXPERIENCE[®]



About this Course

Course objectives

Upon completion of this course you will be able to:

- ▶ Perform linear dynamics simulations
- ▶ Perform coupled structural-acoustic simulations
- ▶ View and evaluate simulation results

Targeted audience

This course is intended for the following roles:

- ▶ Structural Vibration Analyst
- ▶ Noise & Vibration Analyst

Prerequisites

The following course is required prior to taking this one:

- ▶ Structural Model Creation Essentials



1 day

Day 1

- ▶ Lesson 1 Dynamic Simulations
- ▶ Workshop 1 Vibrating Cantilevered Plate
- ▶ Lesson 2 Linear Dynamics
- ▶ Workshop 2a Frequency Analysis of an Exhaust Manifold
- ▶ Workshop 2b Harmonic Response Analysis of a Control Arm
- ▶ Workshop 2c Structural Analysis of a Truck Cabin
- ▶ Workshop 2d Modal Dynamic Analysis of a Vehicle Body-in-White
- ▶ Lesson 3 Coupled Structural-Acoustic Analysis
- ▶ Workshop 3a Coupled Structural-Acoustic Analysis of a Speaker
- ▶ Workshop 3b Coupled Structural-Acoustic Analysis of a Truck Cabin

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We offer regularly scheduled public seminars as well as training courses at customer sites. An extensive range of courses are available, ranging from basic introductions to advanced courses that cover specific analysis topics and applications. On-site courses can be customized to focus on topics of particular interest to the customer, based on the customer's prior specification. To view the worldwide course schedule and to register for a course, visit the links below.

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Revision Status

Lesson 1	1/17	Updated for R2017x
Lesson 2	1/17	Updated for R2017x
Lesson 3	1/17	Updated for R2017x
Workshop 1	1/17	Updated for R2017x
Workshop 2a	1/17	Updated for R2017x
Workshop 2b	1/17	Updated for R2017x
Workshop 2c	1/17	Updated for R2017x
Workshop 2d	1/17	Updated for R2017x
Workshop 3a	1/17	Updated for R2017x
Workshop 3b	1/17	Updated for R2017x

Lesson 1: Dynamic Simulations

Lesson content:

- ▶ Dynamic Response
- ▶ Equations for Dynamic Problems
- ▶ When to Consider Dynamic Effects
- ▶ Workshop Preliminaries



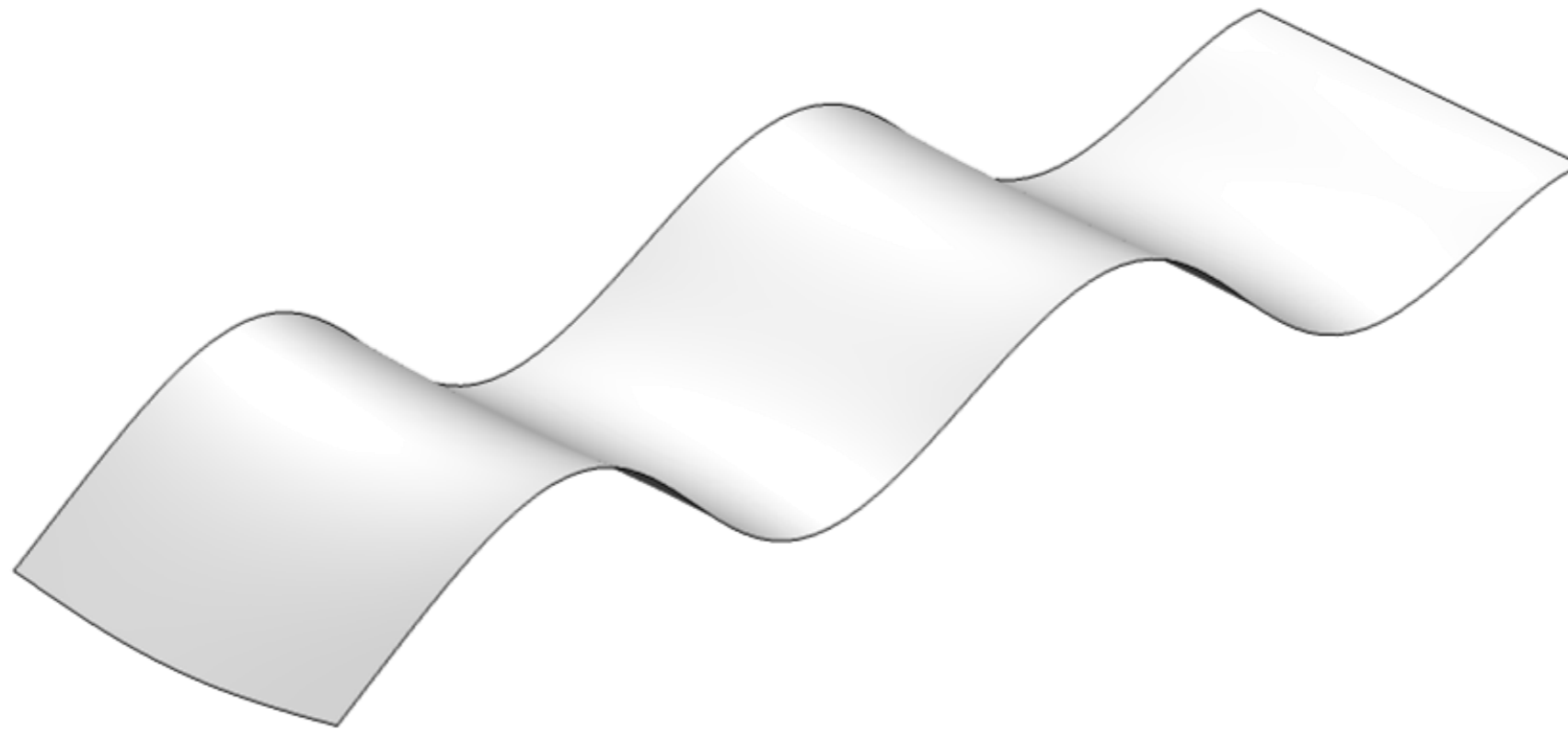
30 minutes

Workshop: Vibrating Cantilevered Plate

In this workshop, you will analyze the dynamic response of a cantilevered plate using frequency extraction.

After completion of this exercise, you will be able to:

- a. Conduct an eigenvalue extraction simulation in order to evaluate the different natural frequency modes of a structure.



30 minutes

Lesson 2: Linear Dynamics

Lesson content:

- ▶ Overview
- ▶ Natural Frequency Extraction
- ▶ Residual Modes
- ▶ Modal Superposition
- ▶ Steady State Dynamics
- ▶ Modal Dynamics
- ▶ Base Motions
- ▶ Damping



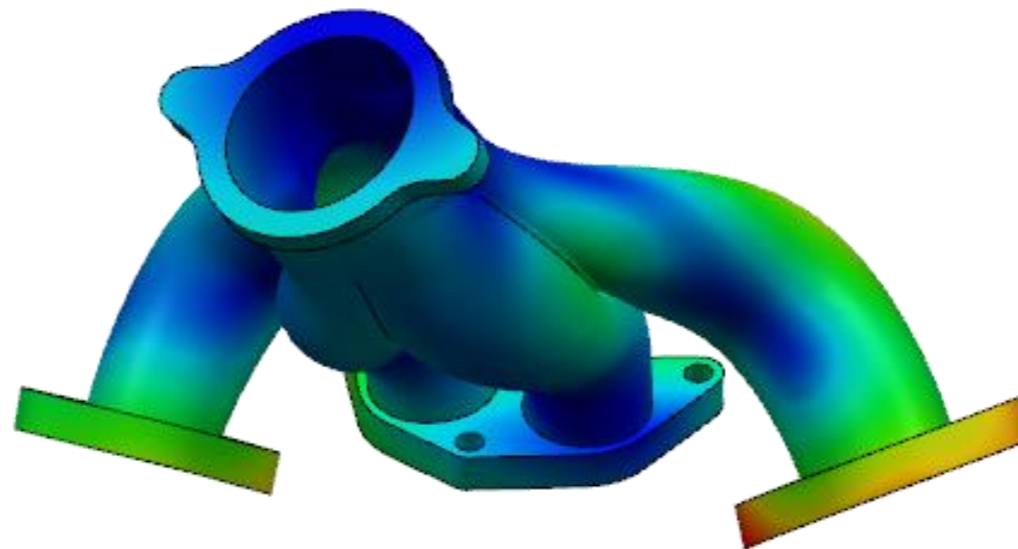
1.5 hours

Workshop: Frequency Analysis of an Exhaust Manifold

In this exercise, the natural frequencies of an unrestrained exhaust manifold are examined. The mesh is imported from an Abaqus input file. The structure is modeled with quadratic tetrahedral elements and linear elastic response representing cast iron is assumed. The frequency extraction will be performed using both the Lanczos and AMS eigensolvers. The results will be compared in terms of accuracy and performance,

After completion of this exercise, you will be able to:

- a. Perform a frequency extraction analysis



30 minutes

