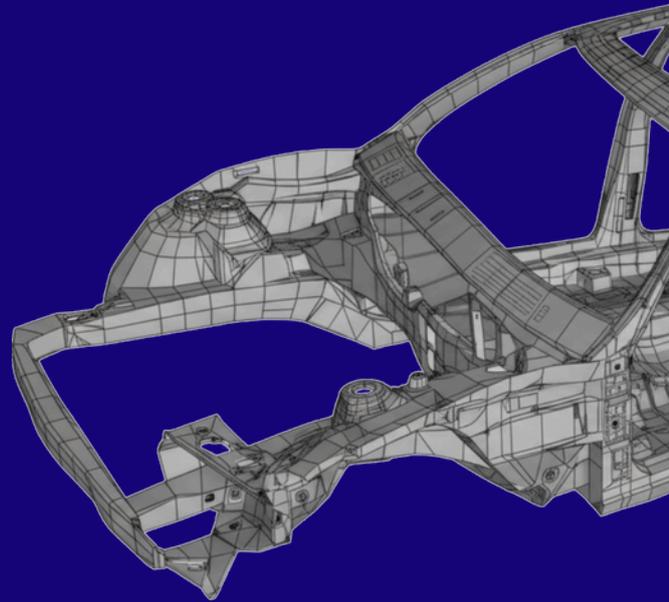


Workshop

Overview of Model Reduction Strategies in Structural Dynamics

The workshop will provide a walkthrough into the world of model reduction for structural dynamics applications. The content is intended as intensive training for industrial realities or anyone in need of a guide to wisely explore opportunities in the field of model reduction.



Intro to finite elements and flexible multibody

Short description of finite element methods and multibody frameworks for flexible systems

1

Intro to linear model order reduction & commercial techniques

Introduction to projection-based reduction concepts, assembly with substructuring, commercial software solutions (e.g. Abaqus, Ansys, Nastran, etc.)

2

Advanced linear model order reduction & parametric reduction

State-of-the-art and advanced projection-based reduction techniques (beyond what is commercially available), parametric extension of model reduction strategies

3

Substructuring & transfer path analysis

Look into reduction and assembly of experimentally-determined systems, experimental-numerical hybrid modeling and transfer of vibrations

4

Nonlinear model order reduction

Reduction extended to nonlinear systems, linear and nonlinear basis, hyperreduction, spectral submanifolds

5

Data-driven & surrogate modeling/identification

Look into the use of data-driven modeling in structural dynamics, Koopman theory, sparse identification, neural networks, gaussian processes

6

Nonlinear dynamics solution techniques

Nonlinear numerical solvers, computation of periodic solutions (e.g. shooting, harmonic balance), steady-state analysis, nonlinear modal analysis

7

Duration: 3 days/16 hrs.

Where: online/hybrid/in-person

When: to be arranged based on client needs

Contact: info@inventum-engineering.com

Lecturers: experts from the Inventum Team

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