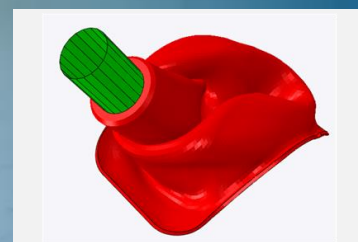


MODELING RUBBER AND VISCOELASTICITY WITH ABAQUS

SIMULIA COURSE DESCRIPTION



Level: Advanced
Products: Abaqus
Disciplines: Structures

Audience
 This course is recommended for simulation analysts who will perform analysis of rubber components.

Why take this course?

Rubber and resilient foam are widely used for a variety of applications, such as seals and gaskets, shock mounts, vibration isolators and tires. The mechanical and chemical properties of these materials allow them to act as excellent seals against moisture, pressure and heat. They also have excellent energy absorption and dissipation capabilities. This course provides a brief overview of finite deformations and the material models available in Abaqus which are used for rubber and resilient foam.

What will you learn?

Upon completion of this course you will be able to:

- Use experimental test data to calculate material constants
- Check the stability of the Abaqus material model at extreme strains
- Obtain the best possible material constants from the available test data
- Select elements for modeling rubber and foams
- Design an appropriate finite element mesh
- Model viscoelastic behavior in both the time and frequency domain
- Use a user subroutine to define the hyperelastic behavior

Explore Your Learning Options

Live Sessions	Engage in Real-Time, interactive group workshops guided by experts. Learn and collaborate live in your preferred language and time zone.	Join a live session
On-Demand Learning	Access expert-designed courses anytime, anywhere. Perfect for independent learners looking to build skills on their schedule.	Start Learning Now
Private Training	Exclusive, tailor-made sessions designed to meet your team's unique goals with expert guidance.	Contact Us for Custom Training



Gain hands-on experience and master real-world workflows through guided, practical training sessions.

Apply nonlinear analysis techniques to simulate complex structural and multiphysics problems accurately.

– SIMULIA Training Expert Team

What You Need to Know Before Starting

Introduction to Abaqus or equivalent and experience using Abaqus.

Agenda for Virtual Live Sessions

Participate in hands-on, real-time workshops where you'll gain practical expertise. Here's what you'll cover:

[Join an Instructor Led Session](#)

Day 1

Lesson 1: Rubber Physics
Lesson 2: Introduction to Hyperelasticity Models
Lesson 3: Mechanical Testing
Workshop 1: Axial Deflection of a Rubber Bushing
Lesson 4: Defining Rubber Elasticity Models in Abaqus
Lesson 5: Modeling Issues and Tips
Workshop 2: Bead Seal Compression

Day 2

Lesson 6: Viscoelastic Material Behavior
Lesson 7: Time-Domain Viscoelasticity
Workshop 3: Bead Seal Relaxation
Lesson 8: Frequency-Domain Viscoelasticity
Workshop 4: Bead Seal Vibration
Lesson 9: Permanent Set in Solid Elastomers
Lesson 10: Anisotropic Hyperelasticity

Additional Material

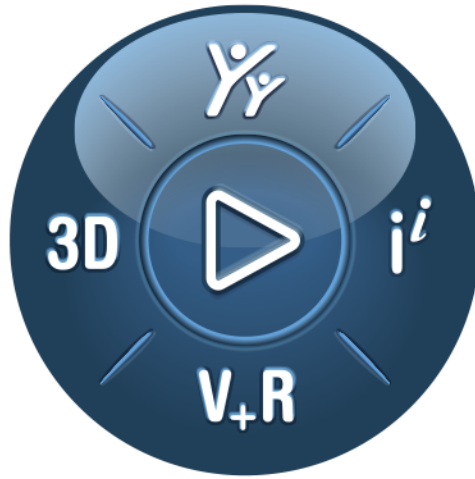
Appendix 1: Finite Deformations
Appendix 2: Rubber Elasticity Models: Mathematical Forms
Appendix 3: Linear Viscoelasticity Theory
Appendix 4: Harmonic Viscoelasticity Theory
Appendix 5: Suggested Reading

Want to Learn More?

Expand your knowledge by exploring our [course Catalog](#) and browsing learning paths on [Eduspace](#), our dedicated e-learning platform.

Join the Community!

[Join the SIMULIA community](#) to connect, learn, and stay updated.



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Dassault Systèmes
10, rue Marcel Dassault
CS 40501
78946 Vélizy-Villacoublay Cedex
France

Asia-Pacific
Dassault Systèmes
17F, Foxconn Building,
No. 1366, Lujiazui Ring Road
Pilot Free Trade Zone, Shanghai 200120
China

Americas
Dassault Systèmes
175 Wyman Street
Waltham, Massachusetts
02451-1223
USA

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