

Lab 2b

Spheres falling into a rigid box with damping

Introduction

This lab is a continuation of lab 2a where we performed a dynamic analysis to analyze the behavior of rubber spheres falling inside an open box under gravity. In this lab, we will study how damping can affect the response of the spheres.

Geometry and model

1. In the Model Tree, click mouse button 3 on the model **SPHERESINBOX** and select **Copy Model** from the menu that appears.
2. In the **Copy Model** dialog box, enter **SPHERESINBOX_DAMPING** as the new model name. Click **OK**.

Interaction Properties


1. Enter the **Interaction** module from the module list.
2. From the main menu bar, select **Interaction**→**Property**→**Edit**→**contact**.
3. In the **Edit Contact Property** dialog box, select **Mechanical**→**Damping** and add a damping coefficient of 0.6. Click **OK** to close the dialog box.

Submit the analysis job

1. In the Model Tree, double-click **Jobs** to create a job named **gravityfall-damping** and select **SPHERESINBOX_DAMPING** as the source model.
2. Submit the job for analysis.

Post processing the results

You are now ready to view the results of the analysis in the Visualization module

1. Once the job completes, right click on the job and click **Results** to enter the Visualization module.
2. Use the X-Y Data  tool to plot the **U3** displacement of the node set **bottomnodes** and compare this to the displacement plot of the node set **bottomnodes** obtained without damping (in lab 2a).
(**Tip:** Hold the shift key and select both the X-Y data plots for **U3** displacement of **bottomnodes**, right click and say **plot**.)
3. Discuss the difference in the displacement plots (with and without damping) in your reports.