

Modal Analysis of a Wing - Numerical Solution

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Numerical Solution

Total Deformation

ANSYS will by default solve for the frequencies of the first 6 vibration modes; however, we would also like to see how this affects the geometry. We can accomplish this task by looking at the total deformations of the airfoil to see where the nodes occur and how the geometry deforms. To tell ANSYS to solve for the deformation, first select **Solution** in the *Outline* window to bring up the Solution Menu bar. In the Solution Menu, select **Deformation > Total**. In the *Details* Window, notice that the deformation is solving for Mode 1. Rename **Total Deformation** to Mode Shape 1.

Create another instance total deformation and rename it Mode Shape 2. Select it, and change **Mode > 2**. Now, you will be solving for the deformation of the 2nd Mode. Repeat this step until you are solving for the total deformation of all 6 modes.

Outline

Project

Model (B3)

Geometry

Part 1

Coordinate Systems

Mesh

Mapped Face Meshing

Edge Sizing

Edge Sizing 2

Modal (B4)

Pre-Stress (None)

Analysis Settings

Fixed Support

Solution (B5)

Solution Information

Mode Shape 1

Mode Shape 2

Mode Shape 3

Mode Shape 4

Mode Shape 5

Mode Shape 6

Details of "Mode Shape 6"

Scope

Scoping Method

Geometry Selection

Geometry

All Bodies

Definition

Type

Total Deformation

Mode

6.

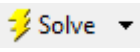
Identifier

Results

☐ Minimum

☐ Maximum

Information

To solve the system, press 

[Go to Step 6: Numerical Results](#)

[Go to all ANSYS Learning Modules](#)