Modal Analysis of a Wing - Numerical Results

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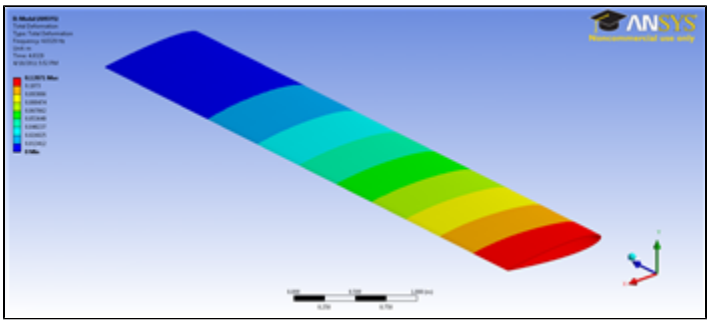
Problem Specification
1. Pre-Analysis & Start-Up
2. Geometry
3. Mesh
4. Physics Setup
5. Numerical Solution
6. Numerical Results
7. Verification & Validation
Exercises
Comments

Numerical Results

Modal Frequencies

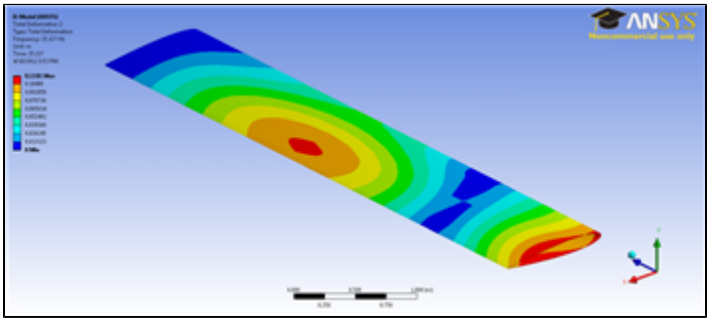
Mode Number	Frequency
1	4.8329
2	25.327
3	32.175
4	38.089
5	48.315
6	53.540

Mode 1



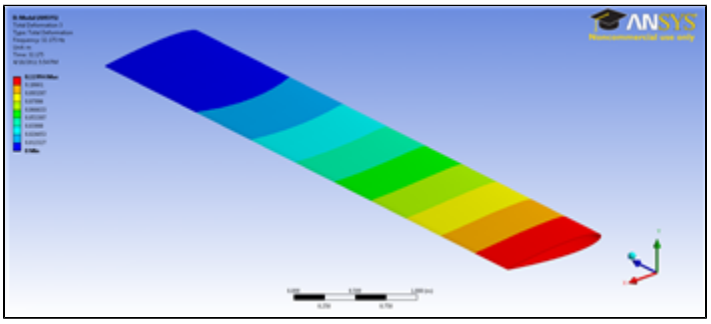
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Mode 2



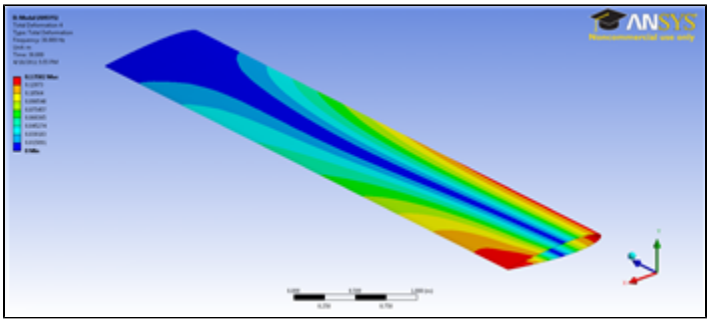
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Mode 3



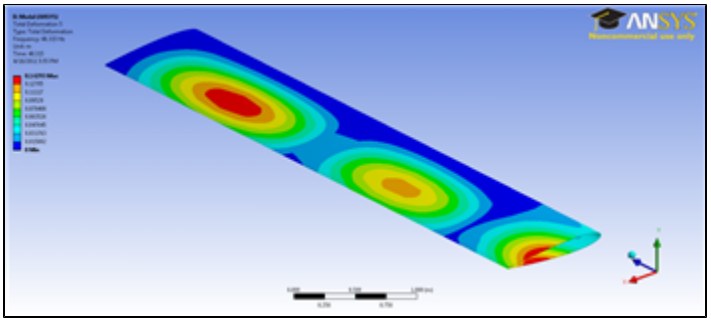
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Mode 4



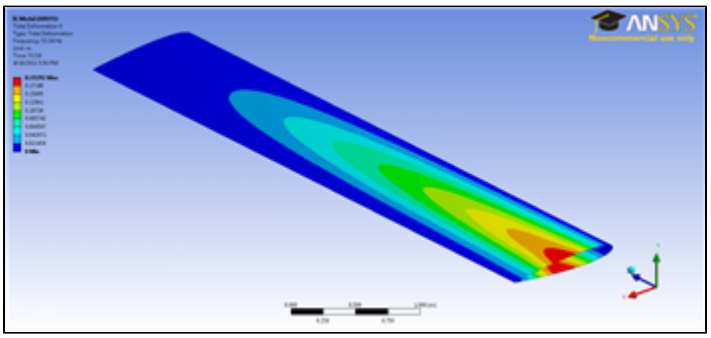
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Mode 5



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Mode 6



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Breathing Mode

In mode 6, the upper surface of the wing displaces downward and the lower surface of the wing displaces upward. Since the amplitude is arbitrary, the two surfaces may even cross each other. Obviously, this is impossible, but there is nothing in our model that says this cannot happen. It is important to realize our model only applies to small vibrations and the displacement amplitude does not represent a real world value. This mode, when the upper surface and lower surface displace in this fashion is called a "breathing mode"

Go to Step 7: Verification & Validation

Go to all ANSYS Learning Modules