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Session 4: Plate Finite Element Simulation

Information :

To start Actran on the Linux based OS at ULB you should:

1. open command line terminal
2. run the following command

>> /serveur/logiciels/actran/Actran_2021.1/bin/actranvi

Exercise 1:

Perform the modal extraction of an Aluminum plate (0.75m x 0.4m x 0.003m) as specified in the workshop: plate_modal_extraction.pdf.

Observe natural frequencies and mode shapes of the plate.

Going Further

- Accuracy of a finite element simulation is impacted by the quality of the mesh. Perform the exercise 1 with a 2 times coarser mesh and evaluate the difference in the natural frequencies compared to original mesh and analytical results.

Exercise 2:

Perform the direct frequency response of the same Aluminum plate for a given harmonic excitation. All the instructions are detailed in the workshop: plate_dfr.pdf

Observe and comment the frequency response function of the z displacement for 3 different points.

Going further

- Perform the calculation while:
    - Doubling the density of the material
    - Doubling the Young's modulus
    - Doubling the thickness

  Observe and comment the impact on the peaks.