

Jonathan Jacqmot (jonathan.jacqmot@fft.be)

## **Session 4: Plate Finite Element Simulation**

### **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.

### **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**

- 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.
- Perform the calculation of exercise 2 while:
  - Doubling the density of the material
  - Doubling the Young's modulus
  - Doubling the thickness

Observe and comment the impact on the peaks.