

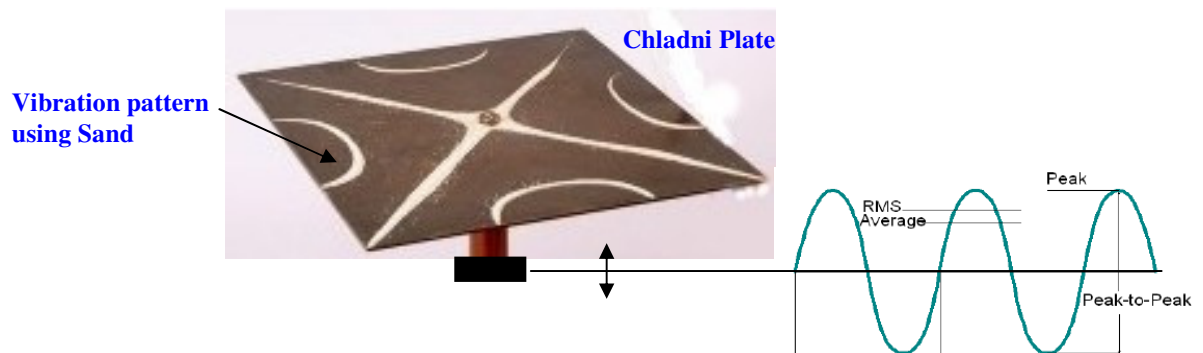
Project Proposal

Experimental Linear / Nonlinear Vibration of a Jointed Plate

Joints based on friction (Rivet/Bolt) are extensively used in aircraft assembly process for linking primary or secondary structural components; therefore a good modelling of such joints is of a great importance for accurate static and dynamic behaviour prediction.

In this project, briefly, a variation of classical and non-classical boundary condition of a plate will be experimentally investigated. In the same time, while the experimental research is carried out, the numerical simulation should be done in another project.

However, this work is expected to be done into the institute laboratory, where high-tech. equipments are available.



• Scope of the work

- Carrying out needed secondary experiments to define some physical constants such as Young's modulus, friction coefficient of the tested plate in particular.
- Carrying out Chladni-plate test for qualitative comparison.
- Measure the natural (linear/nonlinear) frequencies within different possible laboratory boundary condition for quantitative study.

• Expected results

Upon executing the above specified tasks, the expected experience is:

- Unique opportunity for the student to familiarize himself with high-tech tools for dynamic tests.
- Understanding the linear and nonlinear dynamic behaviour of a plate as a key element in aerospace structure.
- Understanding experimentally the effects of boundary conditions on the overall behaviour of a plate.

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