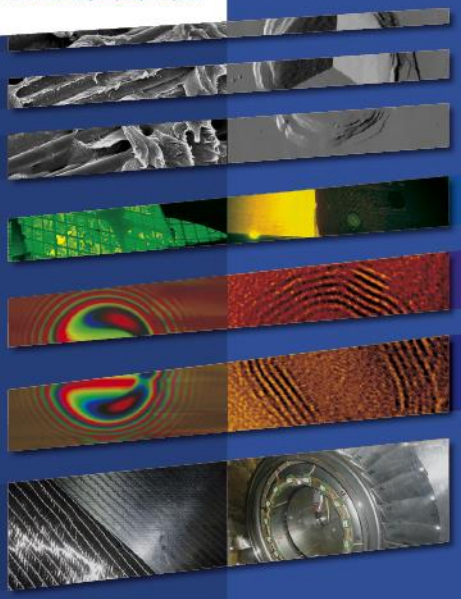

Café Scientifique invité

ECL, amphi 203

Jeudi 6 mars 2014 - 13h-14h

Similitude and Asymptotic Models for Structural Acoustic Research and Applications

Sergio DE ROSA

Laboratory for promoting experiences
in aeronautical structures and acoustics

Dipartimento di Ingegneria AerospazialeUniversità
degli Studi di Napoli "Federico II"
Via Claudio 21, 80125 Napoli, Italia

A summary of two approaches as developed and recently define datpasta-labwill be presented and discussed. Both are related to the possibility to reduce the computational cost of given vibro-acoustic simulations and/or refine the quality of the investigations. The first approach is related to the possibility of defining similitudes and/or predictive models among structural and structural-acoustic systems. The resulting procedure is named SAMSARA: Similitude and Asymptotic Models for Structural-Acoustic Research and Applications; it is the outcome of general modelling activities initially based on numerical and experimental investigations, but later formally defined by invoking the Energy Distribution Approach (EDA). A background overview of the procedure is here given and some more advances are presented by looking to a cylindrical thin shell. Some few rules are discussed in order to have an equivalent model able to represent under some hypotheses, the dynamic behaviour of the original one. Basically, it is shown how the linear dimension can be modified to produce a complete or distorted similitude and further the role of the damping for increasing excitation frequencies to recover the original response. Despite the extreme simplicity of the proposed models, the results are really encouraging. The final aim is to define equivalent (exact and approximated) models to be used in numerical and/or laboratory experiments.

GT Séminaires
36, avenue Guy de Collongue
F - 69134 Écully cedex
Tél. +33 (0)4 72 18 62 84
Fax +33 (0)4 78 43 33 83

Laboratoire de Tribologie et Dynamique des Systèmes

LTDS UMR 5513