Context

Today's innovative companies are using vibration and acoustic modelling to design their products faster and with high acoustic and vibration performance. However, a single universal vibro-acoustic method covering the whole frequency range of interest does not exist in general. The “low frequency” range has been addressed since a long time by deterministic element-based approaches like the finite element method. They have proved their efficiency and their relevance for analyzing the modal behavior of complex mechanical structures and their sound radiations. Beyond this frequency range, applying these approaches is problematic because of high computational cost and for describing the variability and uncertainties of the considered system. Moreover, analyzing the considerable amount of results for extracting the most predominant phenomena involved in the noise radiation is not an easy task. To fill this gap, the development of dedicated methods for the mid- and high-frequency ranges has been and remains a hot topic of research for the vibroacoustic community.

The aim of this summer school is to present a state of the art of these mid- and high-frequency methods developed world wide. During three days, lectures will be given by world specialists of this field of research. The fundamental basis of these methods, their assumptions, their interest and their limitations will be presented. Special attention will be paid on the description of on-going researches on and their potential uses for industrial applications. In order to promote the discussions, the participants are encouraged to present their works in a poster session. Free of registration fee, it is open to audience of PhD students, engineers and researchers interested in numerical modelling in vibro-acoustics.

The organising committee
Kerem Ege (LVA - INSA Lyon), Alain Le Bot (LTDS, Ecole Centrale de Lyon), Laurent Maxit (LVA - INSA Lyon), Nicolas Totaro (LVA - INSA Lyon)

INSA INSTITUT NATIONAL DES SCIENCES APPLIQUÉES LYON

ÉCOLE CENTRALE LYON

Up2HF Summer School

Lyon, France
1-3 july 2015

CeLyA Summer School on Mid and High Frequency Modelling in Structural Acoustics

Lessons given by renowned international specialists
Open to PhD Students, Researchers or Engineers
Free of charge

http://up2hf.sciencesconf.org
up2hf@sciencesconf.org

Courses

Foundation of Statistical Energy Analysis
Alain LE BOT, LTDS – ECL Lyon, France

Finite Element Methods in Mid-Frequency Range
Benoit VAN DEN NIEUWENHOF, Free Field Technologies, Belgium

Statistical Energy Analysis and weak coupling
Svante FINNVEDEN, KTH Stockholm, Sweden

SEA prediction and analysis of complex industrial systems
Gérard BORELLO, InterAc, France

Developments of SEA: variance prediction and coupled SEA-FE models in vibro-acoustics and electromagnetics
Robin LANGLEY, University of Cambridge, UK

Graph theory to compute energy flow paths in mid and high frequency vibroacoustics modelling
Oriol GUASCH, GTM, Universitat Ramon Llull, Barcelona, Catalonia

Statistical modal Energy distribution Analysis (SmEdA)
Laurent MAXIT, LVA – INSA Lyon, France

The Wave Based Method for mid-frequency structural acoustics
Stijn JONCKHEERE, KU Leuven, Belgium

Wave and energies through finite element
Mohamed ICHCHOU, LTDS – ECL Lyon, France

How to validate a method in the mid frequency range?
Louis KOVALEVSKY, University of Cambridge, UK

Trefftz and Weak Trefftz methods for the resolution of medium frequency problems
Hervé RIOU, LMT – ENS Cachan, France

The complex envelope displacement analysis and the complex envelope vectorization method for medium and high frequency problems
Aldo SESTIERI, Università di Roma La Sapienza, Italy

Information

The summer school will be held at **Valpré Lyon conference site**

We recommend all participants stay at the hotel of Valpré. A limited number of rooms have been negotiated at a special price.
Information about travel and access to the summer school site is available at http://en.valpre.com/rubriques/haut/access-contact/access/ .

CeLyA Summer School is open to everybody (PhD students, young researchers, engineers, etc...) with various backgrounds in vibroacoustic modelling. In order to promote the discussions, the participants are encouraged to present their works in a poster session. As the summer school will be entirely in English, we expect international participations.
To enhance interaction between participants and invited speakers, the available places will be strictly limited.
Courses, lunches, coffee breaks and dinners are offered. The participants should fulfill an application form on the conference website (http://up2hf.sciencesconf.org/registration) including a motivation letter and a brief CV. In order to complete your application, please send by mail to up2hf@sciencesconf.org a recommendation letter signed by the head of department or supervisor for PhD students.