http://lva.insa-lyon.fr/

Séminaire du LVA

Computing the modal energy transmission paths in SmEdA using graph theory

Àngels ARAGONÈS MARTIN

GTM Grup de recerca en Tecnologies Mèdia, La Salle, Barcelona, Spain

angelsa@salleurl.edu

Jeudi 17 Juillet 2014 à 13h30

Salle de Cours du LVA - INSA de Lyon

25 bis Avenue Jean Capelle, 69621 VILLEURBANNE

When solving noise and vibrations problems, it is not only important to know the energy level at every part of the system but also to determine how the energy is transmitted throughout the whole system. In other words, to find the energy transmission paths between the vibroacoustic source and the receiver. In previous works, graph theory was used to find the most dominant energy transmission paths in a Statistical Energy Analysis (SEA) model due to, on the one hand, the similarity between a SEA diagram and a graph and on the other, the large amount of algorithms focused on computing paths in a graph. This approach may be extended to other methods, more specifically to Statistical Modal Energy Distribution Analysis (SmEdA).

First, the definition of the SmEdA graph and the adaptation of the algorithms to compute the energy transmission paths in a SmEdA model will be introduced. Afterwards, they will be applied on some benchmark examples to show, for instance, the influence of the non-resonant transmission between two cavities below the critical frequency of the separating plate or the differences on the transmission loss depending on the characteristics of the same plate.