Séminaire commun
LVA - École Doctorale MEGA
Mécanique, Energétique, Génie Civil, Acoustique

# *Applications of Graph Theory to Statistical Energy Analysis*

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**Mardi 8 Avril 2014 à 13h**
**Salle M1B – Bâtiment Saint-Exupéry – INSA de Lyon**
*(plan d'accès page suivante)*
25 bis Avenue Jean Capelle, 69621 VILLEURBANNE

*An overview of some applications of graph theory to statistical energy analysis (SEA) will be given. The first one concerns transmission path analysis (TPA), which is a powerful tool commonly used to solve noise and vibration problems. In SEA, energy paths are identified according to Craik's definition. Traditionally, their classification has been carried out based on expertise or intuition. However, it is possible to associate to every SEA model a corresponding SEA graph and make use of very efficient graph theory algorithms to rank transmission paths. The situation becomes more intricate if the non-deterministic nature of loss factors is taken into account, yet some approaches can be found to classify paths considering the influence of their variance. The second application shows how a strategy based on algorithms for computing cuts in undirected networks can be applied to reduce energy transmission in SEA models. This is done with the sole modification of a limited number of internal and coupling loss factors and considering the case of multiple sources and targets.*

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