

# 28.03.13

## Multicriteria Structural Optimization:

### A (Design) Space Odyssey

Lecture by

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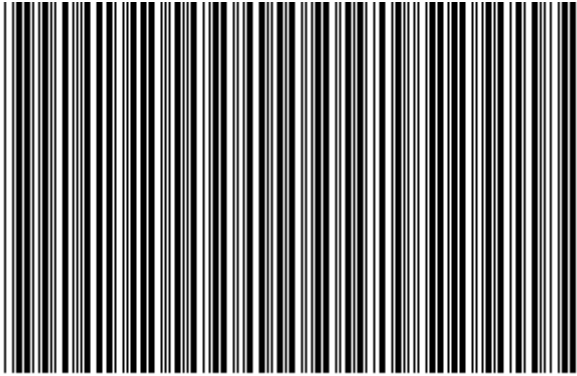
Vrije Universiteit Brussel, Campus Etterbeek

Auditorium Paul Janssens, building K, 2nd floor

Nowadays, civil and architectural engineers are confronted to increasing demands to reduce the cost of lightweight structures, while accounting for the environmental impact, improving safety and comfort, and (last but not least) attempting to propose innovative and inspiring designs. For that multi-task purpose, structural optimization provides a comprehensive set of methods coupling mathematical programming, bio-inspired algorithms, and finite element analysis. However, to be fully applicable to real-life cases, several aspects need to be carefully considered, including the definition of a proper geometrical representation of the structure (definition of the design space), and the need for pursuing multiple objectives simultaneously (multicriteria decision aid). In this lecture, after an introduction to the vocabulary and basic principles of structural optimization, multicriteria design methods will be presented and applied to a few examples of architectural projects involving lightweight structures (Ney+Partners, Nordensen & Associates).

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