i b k
Institut für Baustatik und Konstruktion

Seminar

3. März 2010

Applications of Hierarchical Bayes Analysis

Mittwoch, 3. März 2010
17:00 Uhr
Auditorium HIL E 1 (Lehrgebäude Bauwesen)
ETH Zürich, Hönggerberg, 8093 Zürich

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Professor Marc A. Maes, University of Calgary, Canada is presently visiting the research group on Risk and Safety of Professor Michael H. Faber at ETH Zurich. Professor Maes has a strong background in research on probabilistic modeling and statistical analysis in engineering and is considered a world leading specialist on Bayesian hierarchical probabilistic modeling.

In engineering there are a large number of problems where both commonality and diversity are an essential aspect of uncertainty modeling required for decision making. These include:

- *Assessment and inspection and maintenance planning for reinforced concrete structures subject to chloride corrosion.*
- *Traffic accident safety management on roadway networks.*
- *Inspection and maintenance optimization of pipeline systems subject to corrosion.*
- *Risk management for arctic offshore and marine activities considering iceberg hazards.*
- *Identifying appropriate design values for extreme load effects for the design and assessment of structures.*
- *Reconciling opinions and preferences among different decision makers.*

What these problems have in common is that they can all be modeled using a hierarchical Bayes approach.

The presentation focuses on what a hierarchical Bayesian approach is, when it can be applied and how it may enhance decision making. Moreover the presentation will discuss available techniques and tools for the analysis of hierarchical Bayesian models. The application and benefits of utilizing hierarchical Bayesian modeling and analysis is illustrated considering the problems listed above.