

JCSS Workshop on Structural Robustness

October 28, 2008, Stanford University.

During the last half decade, several initiatives have been taken to intensify collaborate research on structural robustness. Among these initiatives the Joint Committee on Structural Safety (JCSS) initiated an activity on establishing a guideline on robust structural design as well as initiated a joint research project funded by the European Commission under the COST program. In parallel several activities are being conducted in North America, not least the work initiated by NIST.

In connection with the biannual JCSS meeting to be held at Stanford University on October 27-28, 2008 it has been planned to conduct a one day workshop on the topic of Structural Robustness. The workshop will take place on the second day of the JCSS meeting, i.e. on October 28. The main purpose of this workshop is to exchange information about recent advances on theory and methodical developments and to coordinate further research efforts.

Researchers and professional engineers working in the field of structural robustness and structural reliability are invited to join this workshop. In total only 10 presentations will be admitted in order to ensure sufficient time for discussions and conclusions. Papers may also be submitted; in which case they will be published on the JCSS home page, but this is not a requirement.

If you have an interest in participating/presenting at this workshop you should contact Annette Walzer by e-mail: walzer@ibk.baug.ethz.ch before September 10, 2008. Please indicate in your e-mail if you would like to make a presentation; if you do please include a title and a short abstract.

On behalf of the Joint Committee on Structural Safety

John Dalsgaard Soerensen

Reporter of Working Party 1.

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Program

9:00 – 9:30	Opening Baker/Faber
9:30 – 10:10	Recent advances in Assessment of Structural Robustness, Michael H. Faber
10:10 – 10:20	Discussion
10:20 - 10:50	Coffee Break
10:50 - 11:30	NIST Research on Structural Robustness and Mitigation of Progressive Collapse, Fahim Sadek
11:30 – 11:40	Discussion
11:40 – 12:20	JCSS Robustness Initiative, John D. Sorensen
12:20 - 12:30	Discussion
12:30 – 14:00	Lunch
14:00 – 16:00	Discussion of issues in enclosed annex
16:00 – 16:30	Conclusions
16:30	Closure Baker

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Topics to be discussed:

Definitions

- Definitions of structural robustness
- Which hazards to consider in relation to robustness

Characterisations

- Characterization of structures in relation to robustness (conventional / unconventional, redundancy, ductile / brittle,)
- Characterization of consequences:
 - tangible assets, intangibles
 - persons, nature, ...
 - systematic, occasional, rare
 - direct, indirect

Acceptance criteria

- Acceptable risk level for structures after local damage (e.g. due to an accidental action) has occurred
 - target values of the probability that progressive collapse will not appear during period T after local damage has occurred?
- Acceptance criteria in relation to robustness
 - based on cost-benefit analysis
 - based on LQI
- Criteria for robustness

Assessment of robustness

- Should robustness be considered as new information about the structure, beyond risk analysis?
- Is robustness a property of the structure or does it depend on the context?
- Quantification of robustness and methods of assessing robustness
- Methods for designing for robustness

- Effects of quality control on robustness
- Effect of deterioration on robustness
- What can be learned from examples: e.g. Siemens arena and Bad Reichenhall