Robustness of Structures

Summer Course

Sponsored by the JCSS & IABSE WC 1 & RILEM

July, 2-6, 2012

Ohrid, Macedonia

Announcement and Call for Registrations

Organising Committee:
Michael H. Faber, DTU, Denmark
Niels Peter Høj, HOJ Consulting, Switzerland
Kiril Gramatikov, Skopje University, Macedonia
John Dalsgaard Sørensen, AAU, Denmark

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Lecturers
Michael H. Faber, DTU, Lyngby, Denmark
John Dalsgaard Sørensen, AAU, Aalborg, Denmark
Boulent Imam, University of Surrey, UK
Marios Chryssanthopoulos, University of Surrey, UK
Bernt Leira, NTNU, Trondheim, Norway
Miroslav Sykora, Czech Technical University, Prague, Czech Republic
Bassam Izzuddin, Imperial College, London, UK
Luis Simões da Silva, University of Coimbra, Portugal
Sara Casciati, University of Catania, Italy
Gerard Canisius, Scott Wilson, London, UK
Niels Peter Høj, HOJ Consulting, Switzerland
Enrico Rizzuto, University of Genova, Italy

Background and Motivation

Robustness of structures first received significant attention 40 years ago following the partial collapse of Ronan Point, and recent terrorist attacks have resulted in renewed international resources being devoted to the topic. Despite its importance, the engineering profession has been struggling to reach consensus on quantification of robustness for use in design codes and construction projects.

Triggered by the 2001 terrorist attack on the World Trade Centre, the Joint Committee on Structural Safety (JCSS) together with the IABSE Working Commission 1 joined forces to develop concepts and methods for ensuring the robustness of structures. The development was organised within the COST Action TU06010 with the title Robustness of Structures, which was initiated in 2007. This resulted in the formulation of new risk based approaches for the modelling and assessment of robustness of structures.

The COST Action was finalized in 2011 and besides a broad selection of fact-sheet papers published in workshop proceedings, special issues of scientific journals as well as a report on the theoretical framework for robustness of structures and a guideline on robustness of structures for practicing engineers also Summer School Course was developed.

Aim and programme of the Summer Course

The aim of the summer school on Robustness of Structures is to disseminate the latest insights on structural robustness, both in terms of the theoretical basis for assessing structural robustness and in terms of how these insights can be brought into practice through codification as well as design and assessment procedures.

Day				
Monday	Tuesday	Wednesday	Thursday	Friday
Welcome, introduction of the program and background *M. H. Faber*	Survey of Failures Causes and Consequences *M. Chyssanthopolos*	Theoretical Framework for Robustness **Structures Robustness Assessment** *E. Rizzuto*	Vulnerability Modelling **Structural Systems Analysis** *B. Izzuddin*	Consequences of Failures **Direct and Indirect Consequences and Risk Criteria** *B. Imam*
Recent failures in Europe *M. H. Faber*	Theoretical Framework for Robustness **Probability and Risk** *J. D. Sørensen*	Exposure Modelling **Ordinary and Extraordinary Loads** *B. Leira*	Vulnerability Modelling **Existing structures and Material-Related Issues** *L. S. da Silva*	Design of robust structures **Robustness Increasing Measures** *S. Casciati*
Recent Failures and other cases *N. P. Høj*	Theoretical Framework For Robustness **Probabilistic Modeling in Engineering and Risk Assessment of Systems** *J. D. Sørensen*	Exposure Modelling **Deterioration and Human Errors** *M. Sykora*	Vulnerability Modelling **Joints, Details and Examples** *B. Leira*	Implementation in Codes **Safety Format for Structural Design (PMC) and for Robustness?** *G. Canisius*
Group Work **Reasons for Failures and How to Avoid Them?**	Group Work **Scenario Identification for Failures of Structures**	Group Work **Identification of Structural Means for Risk Reduction**	Group Work **Identification of Active Measures for Risk Reduction**	Joint Discussion and Closure

The course plan is shown in the table above with indications of the titles of the lectures as well as the names of the lecturers. As can be seen in the course plan also exercises are provided as an integral part of the course such that the theory and methods are brought into context over the progress of the course.

The program has two morning sessions and one afternoon session plus group work. The course takes place 8:00 – 16:45 Monday to Friday 2- 6 July 2012.

Material on the lecture themes can be found on www.cost-tu0601.ethz.ch/final_deliverables.html. The following material is available and will be used as part of the lecturing material:

Author(s) / Editor(s)	**Title**
Michael Faber and Harikrishna Narasimhan	COST Action TU0601 – Robustness of structures : A summary
John D. Sørensen (Editor)	Theoretical framework on structural robustness
T.D. Gerard Canisius (Editor)	Structural robustness design for practicing engineers

Who should attend?

PhD students and/or practitioners from all fields of engineering and engineering systems, with expertise or interest in the specific theme of robustness.

Venue

The summer school will take place at Hotel Granit - Ohrid (www.hotelgranit.com.mk). Hotel Granit is a 4* hotel located at the Ohrid lake coast, 6 km from the Ohrid city center, the famous touristic place and historical city in Republic of Macedonia. From the arrival airport Skopje, special transport (bus, van or taxi) will be organized. (A small airport in Ohrid is available too). It is recommended to arrange your travel so that you will not arrive later than 18:00 ON 1st July 2012. The return travel should be on the evening of July 6, 2012.

Registration

Interested persons are invited to register to the summer school by filling out and returning the form provided below, or by e-mail to jsa@byg.dtu.dk. (Alternatively mihf@byg.dtu.dk or nph@hoj.ch)

The deadline for registration is May 31, 2012.

Cost and payment

The attendance fee for the summer school is 860 Euro. This includes hotel and meals from Sunday July 1 to Friday July 6, lectures and course material.

Notification of participation

Please indicate your interest to participate in the workshop by filling out the form below and return it as indicated.

Name:_____

Professional title: _____

Company/University: _____

Address: _____

Tel./Fax.: _____

E-mail: _____

Please E-mail to: jsa@byg.dtu.dk . (Alternatively mihf@byg.dtu.dk or nph@hoj.ch)
or by post to:
Judith Selk Albertsen, DTU-Byg, Brovej 1, DK-2800, Kgs. Lyngby, Denmark

Local contact:

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