

Invitation and preliminary program

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# JCSS

Joint Committee  
on Structural Safety

## Time-variant Reliability Analysis: Old challenges and new solutions

Workshop

December 2-3, 2024, Technical University of Munich



## Workshop theme and goals

The reliability of engineering systems is a function of time. Despite this, only limited research on structural reliability analysis and rare event simulation focuses on solving time-variant problems. With this workshop, we want to stimulate the research on time-variant reliability analysis and its application to engineering practice. Leading researchers in the field present the current state of the art and provide input on the directions that future research can take.

The workshop will comprise of invited contributions from experts and discussions among all participants. The joint conclusions of the workshop should identify future research directions and initiate research initiatives and collaborations.

## Venue

### Technical University of Munich

Vorhölzer Forum

Arcisstr. 21

80333 München

Germany

[On Google maps](#)

## Participation

Participation to the workshop and the tutorial is free and open to all interested researchers and engineers. Registration is required.

Refreshments and light lunches will be provided during the workshop. Participation at the workshop dinner is on a self-paying basis. Please indicate if you want to join dinner when registering.

## Registration

Via email to Sabine Meyer, [sabine.meyer@tum.de](mailto:sabine.meyer@tum.de) until November 15. Please indicate the following in your email:

- if you will to attend only the workshop or also the tutorial
- if you will to attend the dinner

## Technical and organization committee

Daniel Straub, Technical University of Munich

Jianbing Chen, Tongji University

Iason Papaioannou, Technical University of Munich

Yongbo Peng, Tongji University

Oindrila Kanjilal, Technical University of Munich

Kai Cheng, Technical University of Munich

## Program

<b>Monday, 2.12.2024: Tutorial on time-variant reliability</b>		
9.00-12.00	This tutorial provides an introduction to time-variant reliability analysis. It is aimed at students, researchers and practitioners with a general background in stochastic methods and reliability.	Oindrila Kanjilal
<b>Monday, 2.12.2024: Workshop</b>		
12.00	Arrival and light lunch	
13.00	Welcome and introduction to the workshop	Daniel Straub Jianbing Chen
<b>Individual contributions part 1</b>		
13.15	Time-variant reliability using time-dependent surrogate models	Bruno Sudret
13:45	Time-variant global reliability of concrete structures under multi-hazards	Jie Li & Jianbing Chen
14:15	Simulation methods for analysis and design in stochastic linear dynamics	Marcos Valdebenito
14.45	Bayesian techniques for updating reliability using data	Xinyu Jia & Costas Papadimitriou
15.15	Coffee break	
<b>Individual contributions part 2</b>		
16.00	Time-dependent reliability analysis with aleatory and epistemic uncertainties	Michael Beer
16.30	The ergodicity assumption in performance-based engineering	Andre Beck
<b>Joint discussion part 1</b>		
17:00 - 18:00	What are the key open questions in research on time-variant reliability assessment?	all
19:30	Workshop dinner	

<b>Tuesday, 3.12.2024: Workshop</b>		
<b>Individual contributions part 3</b>		
9:00	Time-variant reliability analysis by FORM and SORM.	Armen Der Kiureghian
9:30	Sensitivity measures for time-variant reliability analysis	Iason Papaioannou
10:00	Seismic reliability assessment of large-scale complex structures using conditional extreme value distribution method	Yangang Zhao
10:30	Break	
<b>Individual contributions part 4</b>		
11:00	Notes on combined loads from wind and snow	Miroslav Sikora
11:30	Codification and load combination factors	John Sorensen
12:00	Time-dependent reliability of highway bridges: the sense and non-sense of standardised probabilistic influence factors	Rafael Steenbergen
<b>Joint discussion part 2</b>		
12:30 -	What is the application potential for research on time-variant	all
13:00	reliability analysis to enhance structural design and assessment?	

The workshop will be followed by a regular JCSS meeting to be held on December 3 (afternoon) and December 4 (morning).

## Accommodation

Selected hotels in walking distance (approx. 10min):

- Hotel Hauser an der Universität: <http://www.hotel-hauser.de/>
- Hotel Carlton Munich: <https://hotel-carlton.de/>
- Leonardo Boutique Hotel Munich: <https://www.leonardo-hotels.de/>

Many additional hotels can be found around the main train station (20-30min by walking or 2 stops by metro).