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CONFERENCE PROGRAM

11TH INTERNATIONAL WORKSHOP ON RELIABLE ENGINEERING COMPUTING

2-5 SEPTEMBER 2026

International Meeting Center (IBZ)
Dortmund, Germany



DAY 1

Wednesday, 2 September 2026

15:00	Registration
SESSION K1	Opening & Keynotes Session chairs: Matthias Faes & Michael Beer
16:00-16:10	Opening Welcome message Presenter: Faes, Matthias
16:10-16:20	Opening Welcome message - REC Presenter: Muhanna, Rafi
16:20-16:30	Opening Welcome message - Dean, Faculty of Mechanical Engineering, TU Dortmund Presenter: Schulze-Darup, Moritz
16:30-17:30	Keynote Uncertainty quantification in structural engineering problems using improved interval analysis Presenter: Sofi, Alba Authors: Sofi, Alba
17:30-18:30	Keynote Uncertainty quantification & scientific machine learning Presenter: Shields, Michael Authors: Shields, Michael
18:30-20:30	Icebreaker with walking dinner International Meeting Center (IBZ)

DAY 2

Thursday, 3 September 2026

SESSION K2	Keynotes Session chairs: Steffen Freitag & Michael Hanss
08:30-09:15	Junior Keynote Moment-based sensitivity analysis framework for stochastic computational models Presenter: Zhang, Xuan-Yi Authors: Zhang, Xuan-Yi
09:15-10:15	Keynote Dynamic reliability of high-dimensional stochastic systems involving parametric uncertainties and nonstationary stochastic excitations Presenter: Chen, Jianbing Authors: Chen, Jianbing
10:15	Coffee break
SESSION S1	Artificial Intelligence, Explainability and Scientific Machine Learning Session chairs: Vladik Kreinovich & Lukáš Novák
10:45-11:02	ID 103 How can we make reliable engineering computing explainable Presenter: Kreinovich, Vladik Authors: Kosheleva, Olga; Kreinovich, Vladik
11:02-11:19	ID 104 Data and prior knowledge driven FMEA severity assessment via deep attention networks Presenter: Chen, Jieyu Authors: Huang, Hui; Chen, Jieyu; Zhong, Baihong
11:19-11:36	ID 108 Can large language models find the design point? Benchmarking LLM-based MPP search in structural reliability Presenter: Jafariasl, Jafar Authors: Jafari-Asl, Jafar; Novák, Lukáš; Faes, Matthias; Spyridis, Panagiotis
11:36-11:53	ID 125 Adaptive kernel operator learning for spatiotemporal full-field reliability analysis with mixed random inputs Presenter: Liu, Zhao Authors: Liu, Zhao; Li, Kaiwen; Zhu, Ping
11:53-12:10	ID 126 Quantification of modelling uncertainty in physics-informed neural networks by interval arithmetic Presenter: Dimitrov, Zlatan Authors: Dimitrov, Zlatan; Hristov, Peter
12:10-12:27	ID 135 Trustworthy direct interval propagation via conformal prediction in neural network surrogates Presenter: Faza, Ghifari Adam Authors: Faza, Ghifari Adam; Hallez, Hans; Moens, David
12:27-12:44	ID 150 Application of machine learning to reduce model uncertainty and enable resource-efficient design of flat slabs Presenter: Lux, Til Authors: Lux, Til; Feiri, Tânia; Wiens, Udo; Ricker, Marcus

12:45	Lunch
SESSION S2 Reliability Analysis and Sensitivity Methods Session chairs: Jingwen Song & Xuan-Yi Zhang	
14:00-14:17	ID 145 Beyond the design point: When equal failure probabilities may not be equal Presenter: Broccardo, Marco Authors: Broccardo, Marco; Royset, Johannes
14:17-14:34	ID 113 Hybrid reliability analysis with uncertainty in correlation coefficients and first two statistical moments Presenter: Wang, Bo-Yu Authors: Wang, Bo-Yu; Zhang, Xuan-Yi; Zhao, Yan-Gang
14:34-14:51	ID 114 An efficient reliability sensitivity analysis method based on the method of moments Presenter: Zhao, Boqi Authors: Zhao, Boqi; Zhang, Xuanyi; Zhao, Yangang
14:51-15:08	ID 115 A linear-moment-based sensitivity analysis method considering the influence of correlation coefficient Presenter: Li, Qing-He Authors: Li, Qing-He; Zhang, Xuan-Yi; Zhao, Yan-Gang
15:08-15:25	ID 117 An efficient reliability analysis method under hybrid uncertainty for high-dimensional problems Presenter: Zhang, Zi-Xin Authors: Zhang, Zi-Xin; Li, Pei-Pei; Zhao, Yan-Gang
15:25-15:42	ID 121 A bivariate distribution based on squared normal transformation Presenter: Li, Lan-Xin Authors: Li, Lan-Xin; Zhang, Xuan-Yi; Zhao, Yan-Gang
16:00	Coffee break
SESSION S3 Hybrid, Imprecise and Set-Based Uncertainty Session chairs: Peipei Li & Marcos Valdebenito	
16:30-16:47	ID 119 A hybrid interval uncertainty algorithm for structural analysis Presenter: Mullen, Robert Authors: Mullen, Robert; Muhanna, Rafi
16:47-17:04	ID 120 A practical framework for failure probability assessment under aleatory and epistemic uncertainty Presenter: Li, Peipei Authors: Li, Peipei; Valdebenito, Marcos A.; Dang, Chao; Beer, Michael; Faes, Matthias G.R.
17:04-17:21	ID 109 Possibilistic uncertainty modeling with hyperellipsoids Presenter: Behrend, Julian Authors: Behrend, Julian; Könecke, Tom; Rosenfelder, Mario; Schneider, Jan; Hanss, Michael; Eberhard, Peter
17:21-17:38	ID 111 Possibilistic filtering for reliable robot localization Presenter: Hanss, Michael Authors: Schneider, Jan; Könecke, Tom; Ebel, Henrik; Hanss, Michael
17:38-17:55	ID 140 Imprecise probabilistic subset simulation for rigorous bounding of the failure probability Presenter: Nikolov, Valentin Authors: Nikolov, Valentin; Hristov, Petar

DAY 3

Friday, 4 September 2026

SESSION K3 Keynotes Session chairs: Jianbing Chen & George Stefanou	
08:30-09:15	Junior Keynote The art of acquisition functions for Bayesian model calibration and its application in additive manufacturing Presenter: Song, Jingwen Authors: Song, Jingwen
09:15-10:15	Keynote Robust and scalable methods for large-scale networks and systems under severe uncertainty Presenter: Patelli, Edoardo Authors: Patelli, Edoardo
10:15	Coffee break
SESSION S4 Spatial and Temporal Uncertainties Session chairs: Meng-Ze Lyu & Marc Fina	
10:45-11:02	ID 163 Microstructure compatible random field models of heterogeneous materials Presenter: Stefanou, George Authors: Stefanou, George; Savvas, Dimitrios; Gavallas, Panagiotis

SESSION S4		Spatial and Temporal Uncertainties
		Session chairs: Meng-Ze Lyu & Marc Fina
11:02-11:19	ID 129 A transformation-based framework for modeling and simulation of multivariate non-Gaussian random fields Presenter: Lyu, Meng-Ze Authors: Lyu, Meng-Ze; Liu, Yang-Yi; Chen, Jian-Bing; Beer, Michael	
11:19-11:36	ID 151 Fuzzy fields based on the parallelepiped dependency model Presenter: Schietzold, F. Niklas Authors: Schietzold, F. Niklas; Harazin, Felix; Diepelt, Yoshi; Graf, Wolfgang; Kaliske, Michael	
11:36-11:53	ID 162 Surrogate modeling strategy for random fields with uncertain correlation lengths Presenter: Schweizer, Maximilian Authors: Zeller, Emily; Schweizer, Maximilian; Fina, Marc; Wagner, Werner; Freitag, Steffen	
11:53-12:10	ID 165 Random field modeling approach for uncertainty quantification of reused concrete elements Presenter: Fina, Marc Authors: Schiano, Luigi; Fina, Marc; Ahmed, Razhan; Al-Shboul, Oleksandr; Ringeloth, David; Gudžulić, Vladislav; Schoen, Stefanie; Bijeljic, Jelena; Niederleithinger, Ernst; Curosu, Iurie; Neu, Gerrit; Freitag, Steffen	
12:10-12:27	ID 168 Three-dimensional multivariable non-Gaussian random field modeling and simulation of concrete constitutive law Presenter: Fu, Jiahui Authors: Fu, Jiahui; Luo, Yi; Lyu, Meng-Ze; Beer, Michael	
12:27-12:44	ID 122 Spectrally consistent upscaling of wind speed time series data Presenter: Bittner, Marius Authors: Bittner, Marius; Tambat, Parth; Behrendt, Marco; Beer, Michael	
12:45	Lunch	
SESSION S5		Bayesian Inference, Active Learning and Surrogates
		Session chairs: Edoardo Patelli & Michael Shields
14:00-14:17	ID 155 Probability-box propagation with interval prediction models: A reproducible Python workflow Presenter: Hu, Juntao; Patelli, Edoardo Authors: Hu, Juntao; Chen, Yu; Patelli, Edoardo	
14:17-14:34	ID 130 Multivariate active learning for polynomial chaos expansion Presenter: Lu, Qitian Authors: Lu, Qitian; Vořechovský, Miroslav; Novák, Lukáš	
14:34-14:51	ID 138 Probabilistic fatigue life modelling of additively manufactured aluminum alloys via Bayesian inference Presenter: Liang, Zhanhua Authors: Liang, Zhanhua; Song, Jingwen	
14:51-15:08	ID 144 Combining Bayesian active learning and stratified sampling for bounding small failure probability under hybrid uncertainties Presenter: Zhu, Xinyu Authors: Zhu, Xinyu; Cui, Yifan; Wei, Pengfei	
15:08-15:25	ID 154 PINN-accelerated diffusion models for amortized Bayesian inversion of chloride transport in concrete Presenter: Zhao, Xuanyi Authors: Zhao, Xuanyi; Zhang, Weiping	
15:25-15:42	ID 160 Bayesian calibration of resistance spot welding models using temporal process features and streamlined active learning Presenter: Verkens, Bouwe Authors: Verkens, Bouwe; Li, Peipei; Bogaerts, Lars; Faes, Matthias; Van Rymenant, Patrick; Moens, David	
16:00	Coffee break	
SESSION S6		Engineering Applications and Monitoring
		Session chairs: Rubia Bossé & Matteo Broggi
16:30-16:47	ID 134 Stability analysis of concrete gravity dams under uncertainty Presenter: Muhanna, Rafi Authors: Yadav, Binod; Muhanna, Rafi	
16:47-17:04	ID 106 Probabilistic assessment of multiphysics-driven stochastic corrosion for the safety evaluation of nuclear waste canisters Presenter: Piao, Shenghao Authors: Piao, Shenghao; Zheng, Zhibao; Beer, Michael	
17:04-17:21	ID 118 Probabilistic reliability evaluation of autonomous navigation for firefighting robots in uncertain environments Presenter: Zhou, Zhaowei; Shi, Wei Authors: Zhou, Zhaowei; Li, Ruikun; Cong, Fang; Shi, Wei	

SESSION S6		Engineering Applications and Monitoring
		Session chairs: Rubia Bossé & Matteo Broggi
17:21-17:38	ID 137 Integrating deterministic and stochastic uncertainty in terrestrial laser scanner-based deformation monitoring Presenter: Naeimaei, Reza Authors: Naeimaei, Reza; Schön, Steffen; Ötsch, Elisabeth; Neuner, Hans	
17:38-17:55	ID 141 A holistic approach to the life cycle assessment of a propeller system Presenter: Lucas Figueiredo, Paulo Authors: Lucas Figueiredo, Paulo; Torres Farinha, José; Raposo, Hugo; Marques Cardoso, António J.; Duarte Rodrigues, Alice do Carmo; Gonçalves, Paula	
19:00-01:30	Conference dinner Dortmunder Actien-Brauerei (DAB)	

DAY 4

Saturday, 5 September 2026

09:30	Coffee break
SESSION S7	Stochastic Dynamics and Computational Methods Session chairs: Mehdi Modares & Alba Sofi
10:00-10:17	ID 107 A generalized autoregressive model for time-variant dynamical systems Presenter: Marelli, Stefano Authors: Schär, Styfen; Nardin, Chiara; Marelli, Stefano; Sudret, Bruno 
10:17-10:34	ID 102 Stochastic contact analysis and its applications Presenter: Zheng, Zhibao Authors: Zheng, Zhibao 
10:34-10:51	ID 112 A continuous-time Markovian framework for performance-based earthquake engineering: Integrated seismic risk and resilience assessment Presenter: Nardin, Chiara Authors: Nardin, Chiara; Marelli, Stefano; Broccardo, Marco; Sudret, Bruno 
10:51-11:08	ID 105 Neural network-driven uncertainty qualification analysis of printed circuit heat exchangers Presenter: Chen, Hanshu Authors: Chen, Hanshu; Gu, Yanzhao; Fu, Zhuojia; Chen, Guohai; Yang, Dixiong 
11:08-11:25	ID 131 Towards a set-based IVP solver for ODEs on the GPU Presenter: Auer, Ekaterina Authors: Auer, Ekaterina; Gillner, Lorenz; Alexandre dit Sandretto, Julien 
11:25-11:42	ID 159 Efficient probabilistic response analysis of large-scale engineering structures under stochastic excitation via the DR-PDEE incorporating an auxiliary diffusion process Presenter: Sun, Tingting Authors: Sun, Tingting; Chen, Jianbing 
11:42-11:59	ID 147 A regression-tree-based method for structural reliability assessment Presenter: Russotto, Salvatore Authors: Russotto, Salvatore; Di Paola, Mario; Pirrotta, Antonina 
11:59-12:16	ID 169 Probabilistic resilience analysis of urban road network considering wind damage to street trees via dimension-reduced probability density evolution equation (DR-PDEE) Presenter: Luo, Yi Authors: Luo, Yi; Feng, De-Cheng; Ai, Xiao-Qiu; Beer, Michael 
12:30	Lunch

SESSION S8		Rare Events, Reliability and Optimization	
		Session chairs: Luyi Li & Zhouzhou Song	
13:30-13:47	ID 152	A computationally efficient framework for the propagation of interval-process uncertainty Presenter: Zhou, Changcong Authors: Song, Rongyao; Zhou, Changcong	
13:47-14:04	ID 170	A practical stratified importance sampling strategy for extremely rare event estimation in high dimensional systems Presenter: Li, Luyi Authors: Li, Luyi; Wang, H	
14:04-14:21	ID 139	Uncertainty analysis of fatigue failure using a fuzzy approach Presenter: Modares, Mehdi Authors: Shahabi, Mansoureh; Desch, Michael; Modares, Mehdi	
14:21-14:38	ID 116	A weighted extreme value moment method using adaptive sparse grids for time-variant reliability-based design optimization Presenter: Li, Hao-Ming Authors: Li, Hao-Ming; Li, Pei-Pei; Zhao, Yan-Gang	
14:38-14:55	ID 142	Efficient robust topology optimization of large-scale continuum structures under load uncertainty Presenter: Chen, Peihan Authors: Chen, Peihan; Yang, Dixiong	
14:55-15:12	ID 110	A Bayesian framework for modeling and testing the temperature-dependent residual compressive strength of concrete Presenter: Islam, Md Maidul Authors: Islam, Md Maidul; Franchini, Andrea; Jovanovic, Balsa; VanCoile, Ruben	
15:12-15:25	ID 172	Optimal-transport flow matching for stochastic model updating: A comparison with transitional MCMC-based Bayesian updating Presenter: Wang, Tairan Authors: Wang, Tairan; Bi, Sifeng	
CLOSING		Closing	
		Session chairs: Matthias Faes & Michael Beer	
15:25-15:35	Closing	Closing message Presenter: Mullen, Robert	
15:35-15:45	Closing	Closure Presenter: Beer, Michael	