



## Contact

Technische Universität Darmstadt  
Collaborative Research Centre 805  
Otto-Berndt-Straße 2  
64287 Darmstadt, Germany

## Spokesperson

Prof. Dr.-Ing. Peter F. Pelz  
Phone +49 6151 16-271 00  
pelz@sfb805.tu-darmstadt.de

## **Executive Board**

Ms Daniela Kaller  
Phone +49 6151 16-271 04  
kaller@sfb805.tu-darmstadt.de

## **Head of Organization**

Mr Philipp Leise  
Phone +49 6151 16-271 06  
leise@sfb805.tu-darmstadt.de

[www.sfb805.tu-darmstadt.de](http://www.sfb805.tu-darmstadt.de)  
[www.icume.de](http://www.icume.de)



# ICUME 2018

## *3<sup>rd</sup> International Conference on Uncertainty in Mechanical Engineering*

**November 15<sup>th</sup> – 16<sup>th</sup>, 2018**

# Europium 2 Room 3.03/3.04

# 15<sup>TH</sup>

Hassium Room 3.02

November 15<sup>TH</sup>, 2018

9:00 – 9:30	Opening	P.F. Pelz (TU Darmstadt)		
<b>Mastering Uncertainty by Digitalization</b> R. ANDERL / P.F. PELZ				
9:30 – 10:00	PLM, Digital Twin and Uncertainty	J. Ríos (Polytechnic University of Madrid)		
10:00 – 10:20	Comparison of Inductive Inference Mechanisms and their Suitability for an Information Model for the Visualization of Uncertainty	M. Weber, G. Staudter and R. Anderl (TU Darmstadt)		
10:20 – 10:40	Concept of a Resilient Process Chain to Control Uncertainty of a Hydraulic Actuator	I. Dietrich, P. Hedrich, C. Bölling, N. Brötz, F. Geßner and P.F. Pelz (TU Darmstadt)		
10:40 – 11:00	Methods and Technologies for Research- and Metadata Management in Collaborative Experimental Research	N. Preuss, G. Staudter, M. Weber, R. Anderl and P.F. Pelz (TU Darmstadt)		
11:00 – 11:20	Coffeebreak/Poster Display	11:00 – 11:20 Coffeebreak/Poster Display		
<b>Optimization under Uncertainty</b> M.E. PFETSCH / S. ULRICH				
11:20 – 11:50	Optimal Control of Systems Governed by PDEs with Uncertain Parameters	G. Stadler (New York University)	11:20 - 11:50 Design and Analysis with New Materials in a Context of Uncertainty	D. Vandepitte (KU Leuven)
11:50 – 12:10	Optimal Placement of Active Bars for Buckling Control in Truss Structures under Bar Failures	T. Gally, A. Kuttich, M.E. Pfetsch, M. Schäffner and S. Ulbrich (TU Darmstadt)	11:50 – 12:10 Quantification of Uncertainty in the Mathematical Modelling of a Multivariable Suspension Strut using Bayesian Interval Hypothesis-Based Approach	S. Mallapur and R. Platz (TU Darmstadt)
12:10 – 12:30	Robust Design of a Smart Structure under Manufacturing Uncertainty via Nonsmooth PDE-Constrained Optimization	P. Kolvenbach, S. Ulbrich, M. Krech and P. Groche (TU Darmstadt)	12:10 – 12:30 Sparse Gaussian Process Emulators for Surrogate Design Modelling	P. Gardner, T. Rogers, C. Lord and R.J. Barthorpe (University of Sheffield)
12:30 – 13:30	Lunch/Poster Display	12:30 – 13:30 Lunch/Poster Display		
<b>Responsibility for Autonomous Systems</b> P. GROCHE/J. WENDT				
13:30 – 14:00	Autonomy of the TU Darmstadt	H. J. Prömel (TU Darmstadt)		
14:00 – 14:30	Autonome Systeme im Kontext bestehender Rechtssysteme	P. Reusch (Reusch Law)		
14:30 – 14:50	Autonomous Manufacturing Processes under Legal Uncertainty	L. Jogerst, M. Knoll, F. Hoppe, J. Wendt and P. Groche (TU Darmstadt)		
14:50 – 15:10	On Obligations in the Development Process of Resilient Systems with Algorithmic Design Methods	L.C. Altherr, L. Jogerst, P. Leise, M.E. Pfetsch, A. Schmitt and J. Wendt (TU Darmstadt)		
15:10 – 15:30	Coffeebreak/Poster Display			
<b>Uncertainty Quantification</b> M. KOHLER				
15:30 – 16:00	A Frequentist Approach to Computer Model Calibration	R. Wong (Texas A&M University)		
16:00 – 16:20	Estimation of Uncertainty in the Lateral Vibration Attenuation of a Beam with Piezo-Elastic Supports by Neural Networks	S. Kersting and B. Götz (TU Darmstadt)		
16:20 – 16:40	Inverse Interval Field Quantification via Digital Image Correlation	M. Faes and D. Moens (KU Leuven)		
19:00	Conference Dinner at Welcome Hotel Darmstadt			

# Europium 2 Room 3.03/3.04

# 16<sup>TH</sup>

Hassium Room 3.02

November 16<sup>TH</sup>, 2018

9:00 – 9:10	Opening	P.F. Pelz (TU Darmstadt)		
<b>Controlling Product Properties in Manufacturing Processes</b> P. GROCHE				
9:10 – 9:40	Feedback Control of Product Properties in Metal Forming Processes: Opportunities and Challenges	S. Duncan (University of Oxford)		
9:40 – 10:00	Reducing Uncertainty in Shunt Damping by Model-Predictive Product Stiffness Control in a Single Point Incremental Forming Process	F. Hoppe, M. Knoll, B. Götz, M. Schäffner and P. Groche (TU Darmstadt)		
10:00 – 10:20	Cloudbased Production Optimization – Potential and Limits Today	R. Feist (Achenbach Buschhütten GmbH & Co. KG)		
10:20 – 10:40	Towards Damage Controlled Hot Forming	M. Bambach, I. Sizova and A. Emdadi (Brandenburg University of Technology)		
10:40 – 11:00	Numerical Comparison of three Different Feedback Control Schemes Applied on a Forming Operation	B. Endelt (Aalborg University)		
11:00 – 11:20	Coffeebreak/Poster Display			
<b>Contemporary Design – from Intelligent Components to Resilient Systems</b> H. KLOBERDANZ		<b>Uncertainty in High Precision Manufacturing Processes</b> E. ABELA		
11:20 – 11:50	From Robust Design Guidelines to a Coherent Approach for Lifecycle Robustness	T. Eifler (Technical University of Denmark)	11:20 – 11:50 Uncertainties in Machining Distortion of Aviation Integral Parts and its Controlling	N. He (Nanjing University of Aeronautics and Astronautics)
11:50 – 12:10	Adaptivity of Resilient Load-Carrying Systems	P. Schlemmer, H. Kloberdanz, C.M. Gehb and E. Kirchner (TU Darmstadt)	11:50 – 12:10 Simulation of Multi-Stage Fine Machining Processes at the Example of Valve Guide and Valve Seat	C. Bölling and E. Abele (TU Darmstadt)
12:10 – 12:30	Resilient Product Development – a New Approach for Controlling Uncertainty	P. Hedrich, N. Brötz and P.F. Pelz (TU Darmstadt)	12:10 – 12:30 Adjustment of Axis Offset Errors during Reaming	A. Bretz, F. Geßner, T. Öztürk, C. Rinn and E. Abele (TU Darmstadt)
12:30 – 12:50	Optimal Booster Station Design and Operation under Uncertain Load	H. Sun, L.C. Altherr (TU Darmstadt), J. Pei (Jiangsu University), P.F. Pelz (TU Darmstadt) and S. Yuan (Jiangsu University)	12:30 – 12:50 Cross-Domain Tolerance Analysis for Directional Control Valves Based on Imperfect Information	R. Tautenhahn and J. Weber (TU Dresden)
12:50 – 13:50	Lunch/Poster Display	12:50 – 13:50 Lunch/Poster Display		
<b>Resilient Technical Systems</b> L.C. ALTHERR/M.E. PFETSCH				
13:50 – 14:20	Resilient Energy Infrastructures in the Context of Safety, Security and Sustainability	Peter Burgherr (Paul Scherrer Institut Switzerland)		
14:20 – 14:40	Resilience in Mechanical Engineering – a Concept for Controlling Uncertainty during Design, Production and Usage Phase of Load-Carrying Structures	L.C. Altherr, N. Brötz, I. Dietrich, T. Gally, F. Geßner, H. Kloberdanz, P. Leise, P.F. Pelz, P. Schlemmer and A. Schmitt (TU Darmstadt)		
14:40 – 15:00	Towards Resilient Process Networks – Designing Booster Stations via Quantified Programming	M. Hartisch, A. Herbst, U. Lorenz and J.B. Weber (University of Siegen)		
15:00 – 15:20	Algorithmic Design and Resilience Assessment of Energy Efficient High-Rise Water Supply Systems	L.C. Altherr, P. Leise, M.E. Pfetsch and A. Schmitt (TU Darmstadt)		
15:20 – 15:30	Closing Remarks	P.F. Pelz (TU Darmstadt)		