Prof. Dr. Markus Zimmermann
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TUM School of Engineering and Design
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Technical University of Munich

Prof. Dr. Philipp Höfer
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Prof. Dr. Tobias Dickhut
Institute for Aeronautical Engineering
Chair for Composites
Universität der Bundeswehr München

Prof. Dr. Alexander Horoschenkoff
Prof. Dr. Klemens Rother
Prof. Dr. Jörg Middendorf
Department of Mechanical, Automotive and Aeronautical Engineering
University of Applied Sciences Munich

- Invitation and Agenda -

Munich Symposium on Lightweight Design 2021

Münchner Leichtbauseminar 2021

03.11.2021 Technical University of Munich
17.11.2021 Universität der Bundeswehr München
01.12.2021 University of Applied Sciences Munich

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Wednesday 03.11.2021

Laboratory for Product Development and Lightweight Design
TUM School of Engineering and Design
Technical University of Munich

Venue: **TUM Entrepreneurship Research Institute**
Lichtenbergstraße 6
85748 Garching bei München

Additional information for your participation:

Please register online. 3G-rules (vaccinated, tested or recovered) apply. The event organizer is obliged to check a 3G proof.

13:30 M. Zimmermann (Technical University of Munich, LPL): Opening

- Session 1: Design Tools -

13:35 T. Rosnitschek, A. Gläseke, F. Hüter, B. Alber-Laukant, S. Tremmel (Universität Bayreuth): Optimization of fused filament fabricated infill patterns for sandwich structures in a three-point bending test

14:00 E. Hutapea, N. Dommaraju, F. Duddeck, M. Bujny (Technical University of Munich): Structural Deformation Behavior Analysis using Manifold Learning Methods

14:25 M. Jäger, S. Wartzack (Friedrich-Alexander-Universität Erlangen-Nürnberg): Efficient computation of spatial truss structures for design optimization approaches using tube-shaped thin-walled composite beams

14:50 Break

- Session 2: New Technologies -

15:10 Emre Ertürk (Universität der Bundeswehr München), Jens Bold (Boeing Deutschland GmbH), Philipp Höfer (Universität der Bundeswehr München), Christoph Stark (GERG GmbH), Wolfgang Höhn (GMA-Werkstoffprüfung GmbH): 3D material model for additive manufactured metallic parts

15:35 K. J. Winkler, M. Schmitt, G. Schlick, T. Tobie, K. Stahl, R. Daub (Technical University of Munich): Characterization and Influences on the Load Carrying Capacity of Lightweight Hub Designs of 3D-printed Gears (16MnCr5, LPBF-process)

16:00 M. Bender, E. Fauster (Montanuniversität Leoben): Compressibility and Relaxation Characteristics of Bindered Non-Crimp-Fabrics under Temperature and Injection Fluid Influence

16:25 Break

- Session 3: Applications -

16:45 A. Brenzinger, T. Hosenfeldt (Schaeffler Technologies): Structure Optimization Methods for the Development of a Multi-Material Rotor

17:10 C. Wolf, S. Reinspach, A. Neumann (Airbus Helicopters): Development, industrialization and qualification of a lever shaft integration for a long range aircraft

Wednesday 17.11.2021

Universität der Bundeswehr München

Institute of Lightweight Engineering — Institute for Aeronautical Engineering, Chair for Composites

Universität der Bundeswehr München

Venue: **Werner-Heisenberg-Weg 39**
85579 Neubiberg
Building 33, Room 3231

Additional information for your participation:

Registration necessary (online). Access to Campus through visitor gate (Westtor, Crossing Universitätsstraße, Zwergerstraße). ID card required.

13:00 Opening

13:10 F. Hübner, M. Hoffmann, N. Sommer, V. Altstädt, H. Ruckdäschel (Universität Bayreuth): Fracture behavior of latent epoxy resins for towpreg winding of hydrogen vessels: The role of low temperature active toughening and yielding

13:35 P. Erhard, D. Boos, D. Günther (Fraunhofer IGCV): In-Mould Coating gepresster, naturfaserverstärkter Salzkerne für Druckgussanwendungen

14:00 F. Mesarosch, T. Schlotthauer, M. Springmann, J. Schneider, P. Middendorf (Universität Stuttgart): Topology optimization and production of a UAV engine mount using various additive manufacturing processes

14:25 M. Liebl, St. Carosella, P. Middendorf (Universität Stuttgart): Determination of the bending stiffness of spread carbon fibre tows with reactive binder

14:50 Break

15:10 J. de Freese (WIWeB): Untersuchung und Modellierung von Zerspanungsprozessen zur Oberflächenvorbehandlung für das strukturelle Kleben von CFK

15:35 E. Buchmann, F. Hadwiger, Ch. Petroll, Ch. Zauner, A. Horoschenkoff, P. Höfer (Universität der Bundeswehr München, Hochschule München, KRP Mechatec GmbH): A Unit Cell with Tailorable Negative Thermal Expansion Based on a Bolted Additively Manufactured Auxetic Mechanical Metamaterial Structure: Development and Investigation

16:00 B. F. Goularte, V. M. Bruère, A. Lion, M. Johlitz (Universität der Bundeswehr München): Multiparametric design optimization of 3D printed aircraft door seals

16:25 Break

16:40 N. Korte, J. Bold (Universität der Bundeswehr München, Boeing Deutschland GmbH): Substitution of strain gauges by optical strain measurement for standard test methods of composite specimens

17:05 M. Denk, K. Rother, E. Gadzo, K. Paetzold (Universität der Bundeswehr München, HS München): Multi Objective topology optimization of frame structures using the weighted sum method

17:30 Break

17:40 Y. Willemin, T. Koch (9tlabs): New automated solution for Serial Production of Industrial-Grade, Continuous Carbon Fibre Composites

18.05 M. Blanke, R. Brandis (DMG MORI): Structural Optimization in Lightweight Design for SLM meets additive serial production and efficient post-machining

Wednesday 01.12.2021

Department of Mechanical, Automotive and Aeronautical Engineering
University of Applied Sciences Munich

Venue: **Fakultät für Maschinenbau**
Fahrzeugtechnik und Luft- und Raumfahrttechnik
Hochschule München
Dachauer Str. 98b
80335 München
Gebäude E, Raum 0103

Additional information for your participation:

Presence: 3G-rules (vaccinated, tested or recovered) apply. Online: https://hm-edu.zoom.us/j/4461419323?pwd=MEZQOUtBK0M0dWprY1JlQ1VURkFVUT09
Meeting-ID: 446 141 9323, Passwort: 318250)

14:00 Alexander Horoschenkoff und Christian Möller (Hochschule München): Begrüßung und Einführung in die Thematik KI

14:15 Werner Pohl (FCMS Fast Concept Modelling & Simulation GmbH): Rechnergestützte Entwicklungen für Ultraleichtbaustrukturen

15:00 Sebastian Schmidhuber, Martin Schmid (KraussMaffei GmbH): Intelligente Maschinentechnik für Leichtbaustrukturen

15:45 Break

16:00 Martin Denk[1], Klemens Rother[2], Josef Neuhäusler[2], Kristin Paetzold[1] ([1]Universität der Bundeswehr, [2]Hochschule München): Cross-Section Parametrization with CNN Classification and Moments of Area Regression of Frame Structures

16:45 Konstantin Heidacher[1], Christian Wrana[1], Michael Ruf[2], Alexander Horoschenkoff[1] ([1]Hochschule München, [2]BMW AG): Manufacturing Technologies for Box-Shaped Pressure Vessels with Inner Tension Struts