### Accommodation

Dresden-Radebeul offers a good range of hotel accommodation. Special arrangements for participants are being done and will be described soon at val5.de.

### Insurance

The conference organiser cannot be made responsible for any personal accident or loss or damage of private property of participants and accompanying persons. Participants have to arrange for their own insurance cover if considered necessary.

## Visa

Under German law responsibility for issuing visas lies with the missions of the Federal Republic of Germany, i.e. its embassies and consulates-general. Local responsibility for issuing the visa lies with the mission responsible for the area in which the applicant has his/ her ordinary residence or domicile.

## Registration

Registration has to be made online through the registration access on the conference website val5.de. Registration for the conference is mandatory for the presentation of a lecture and the publication of the manuscript in the proceedings. A confirmation of the registration will be send to the participant by e-mail / pdf.

# Registration Fee

Early Bird Registration up to 15 December 2023.

Member of DVM	1080 EUR*
Non-Member	1170 EUR*
Speaker (1 person per contribution)	990 EUR*

\*Registration after 1<sup>st</sup> March 2024 will be subject to an extra charge of EUR 100,00.

According to § 4, para. 22, German Turnover-Tax Law registration fees are exempt from VAT. For social programmes such as sightseeing fees VAT is not shown according to the § 25 German Turnover-Tax Law (German: UstG).

#### Payment

All payments have to be made in Euro (€) by credit card or bank transfer. Registration fees have to be paid without deductions. All banking costs have to be paid by the participant. Credit cards (VISA, MasterCard, American Express) will be accepted as well as payment by bank transfer.

#### Cancellations

All changes or cancellations have to be submitted in writing (e-mail, telefax or airmail). In case of cancellation before 15 May 2024, the conference organiser is allowed to charge 50% of the registration fee plus 25 € service charge. Name substitutions will be accepted at any time at no extra charge. Cancellations received after 15 May 2024 are not refundable. All refunds will be settled after the conference.

# VAL5 Executive Chairs

Alfons Esderts Technical University Clausthal, Clausthal-Zellerfeld, Germany Sven Werdin

Technical University Dresden, Dresden, Germany

Christoph Bleicher Fraunhofer Institute for Structural Durability and System Reliability LBF, Darmstadt, Germany

# National Scientific Committee

- O. Birk, Volkswagen AG, Wolfsburg M. Decker, AUDI AG, Ingolstadt S. Götz, University of Applied Sciences, Berlin *M. Luke*, Fraunhofer Institute for Mechanics of Materials IWM. Freiburg M. Vormwald, Technical University Darmstadt
- *R. Waterkotte*, Schaeffler Technologies, Herzogenaurach

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ny, Poland n, Turkey ortugal lis, Greece hka, Austria *I*, United Kingdom rpitte, Belgium dori, Italy





R. Rennert, IMA Materialforschung und Anwendungstechnik GmbH, Dresden H. Zenner, DVM Berlin and TU Clausthal *M. Zimmermann*. TU Dresden and Fraunhofer Institute for Material and Beam Technology IWS

# Local Committee

A. Esderts, S. Werdin, C. Bleicher

K. Leers, S. Bachofer, DVM Berlin

## VAL History

• 2002 in Tours, FR (SF2M, ASTM), 2009 in Darmstadt, DE (DVM, ASTM) • 2015 in Prague, CZ (Czech Techn. Univ.) 2020 proceedings (DVM)

# Organization



German Association for Materials Research and Testing e.V.

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German Association for Materials Research and Testing e.V.

VAL5

**Fifth International Conference on Material and Component Performance under** Variable Amplitude Loading

Call for Papers



11 to 13 Juni 2024 Dresden, Germany

**Conference Website** val5.de

# Scope

Components, assemblies and even entire systems are characterised by cyclic-oscillating, time-varying and often random load sequences that can lead to material fatigue and other damage mechanisms. The associated failures, downtimes or maintenance requirements are causes of high costs and damage consequences. Therefore, understanding the dependency of fatigue damage and random cyclic loading is a necessary prerequisite for the operationally durable dimensioning of components and structures.

However, such a component design in accordance with the principles of fatigue strength is not only motivated by the effort to avoid damage and repairs. Today's increasingly important issues of lightweight construction, material and energy efficiency and, thus, improved sustainability require exact knowledge of the operational loads and the corresponding fatigue behaviour. Sustainability in a modern sense means the most efficient possible use of available resources and this goal can only be achieved for many components and structures if the load sequences occurring in operation are known and taken into account for the optimisation of materials, design and production. Variable load amplitudes as a characteristic feature of typical operational load sequences thus become a very important design parameter for sustainable, optimised components and structures.

Therefore, the goal of this conference, organized by the German Association for Materials Research and Testing (DVM), is to provide a platform to the international community for exchanging ideas and information about recent developments, new scientific approaches and industrial applications regarding variable amplitude fatigue of materials, components and structures. Started in 2002, the 2024 conference will be the fifth in a row and will continue to provide excellent opportunities for researchers and industrial representatives to discuss recent achievements and results of research studies, new approaches and state-of-the-art processes in different industries.

#### Conference programme

The VAL5 conference schedule including session arrangements and abstracts of the contributions will be published on the conference website val5.de.

## **Conference** language

The conference language is English and will be required for abstracts, papers, posters and oral contributions.

#### Call for Papers in the following **Scientific Topics**

The conference is open to valuable proposals related to six different key topics which are relevant for numerous different user industries. When submitting vour abstract to the conference website val5.de. please indicate to which key topic (A to F), sub topic (1 to 4) and user industry (I to VI) your proposal refers.

#### (A) Fatigue and vibration fatigue

- (1) Load assumptions and data reduction
- (2) Shock, harmonic and random vibrations
- (3) Multiaxial component & system life testing
- (4) Math modelling & computational fatigue

#### (B) Fracture mechanics

- (1) Fatigue crack propagation
- (2) Microstructure and fractography
- (3) Modelling of cracks incl. microstructure models
- (4) Modelling of crack propagation incl. crack opening & closure

#### (C) Advanced load data & reliability concepts

- (1) Data acquisition and georeferencing of data
- (2) Condition monitoring and residual life assessment
- (3) Data mining, big data and data analytics
- (4) Machine learning and predictive analytics

#### (D) Test and control

(1) Active systems using sensors, actuators and controls (2) Digital twins and 'in-the-loop' technologies (3) Advanced test rig hardware and control strategies (4) Virtual sensing

#### (E) Advanced materials and manufacturing

(1) New metallic material grades (2) Plastics and composites (3) Ceramics and smart materials (4) Additive Manufacturing and new joining technologies

#### (F) Effects on lifetime

- (1) Design and materials
- (2) Environmental conditions and corrosion
- (3) Loading modes and effect of sequence
- (4) Surface treatment and residual stresses
- I Automotive (car, bus & truck)
- II Aviation
- III Railwav
- IV Maritime
- V Civil & plant engineering
- VI others

## Exhibition

An accompanying exhibition showcasing technology, products and services related to variable amplitude fatigue is planned. For details please have a look at val5.de.

# Social Events

Events and possibilities for visiting companies and institutes will be announced soon at the conference website val5.de.

# Timeline

# April 2023

#### 1<sup>st</sup> March 2024

# 15 April 2024

#### 15 May 2024

#### A. Esderts, S. Werdin, C. Bleicher Chairmen of VAL5 International Conference

Start of abstract submission. For details please refer to the conference website val5.de

#### 15 September 2023

End of abstract submission

#### 20 November 2023

Notification of authors about acceptance of their papers

### December 2023

Start of Early Bird registration

 End of Early Bird registration • Deadline for submission of full papers and registration including payment (conditional for publication of paper)

Tentative conference programme online

• Final conference programme available Submission of power point presentations

#### 11 to 13 June 2024

VAL5 Conference in Dresden, Germany

# Conference proceedings and further Publications

Proceedings will be available as searchable PDF archive for download using an individual access code which comes together with the conference check-in.

Outstanding contributions to VAL5 will be selected for the publication in an extended format in special issues of renowned international journals such as »International Journal of Fatigue«, »Fatigue and Fracture of Engineering Materials« and »Structures and Engineering Fracture Mechanics«. Editorial boards will guide this process to ensure scientifc impact and quality.

## Conference Venue

The name of Dresden is synonymous with art and culture. Dresden is the capital of Saxony and is located along the Elbe River. The 800 year old Baroque city offers cultural and art treasures of European rank, world-famous art collections, but also a lively theatre and music scene. Architectural jewels blend into a charming natural landscape. Situated close to the Elbe River in Dresden's leafy suburbs, the new Radisson Blu Park Hotel & Conference Centre, Dresden Radebeul, offers guests a peaceful location just 7 kilometres from Dresden city centre, 9 kilometres from Dresden Airport and 3 kilometres from the motorway, the hotel is easily accessible by road, rail and from the airport. For more information see val5.de.

# Travelling Information

Dresden is located just in the middle of the European Union and is reachable by motorways from Munich, Frankfurt, Hamburg or Berlin. Direct flights to Dresden are offered by airports all over the world or with only one stop from the international airports of Frankfurt and Munich. Details see val5.de.

