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 //www.val4.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 2019.

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

*Registration after 15 December 2019 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 after 15 December 2019, 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 December 2019 are not refundable. All refunds will be settled after the conference.

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VAL4 is supported by the International Associations

ASTM INTERNATIONAL Committee E08 on Fatigue and Fracture

ESIS European Structural Integrity Society

CSM Croatian Society of Mechanics, Croatia

CSM Czech Society for Mechanics, Czech Republic

EIS Engineering Integrity Society, UK

IGF Gruppo Italiano Frattura, Italy

SF2M Société Française de Métallurgie et de Matériaux, France

UTMIS The Swedish Fatigue Network, Sweden

Organization

DVM
German Association for Materials Research and Testing e.V.

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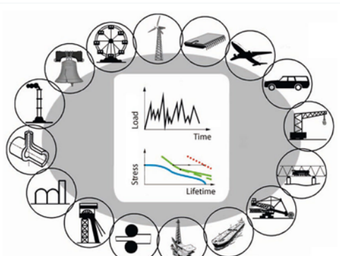
DVM

VAL4
Fourth International Conference on Material and Component Performance under Variable Amplitude Loading

Call for Papers



30 March to 03 April 2020
Darmstadt, Germany

Aims and Scope

Variable amplitude (spectrum) loading dominates the operational load conditions of many components and systems across different industries.
Durability and operational safety is concerned with designing and operating products, incorporating a thorough and complete understanding of the loading and the environment they will encounter. Prerequisite is the complete knowledge of the mechanisms by which the materials concerned will fail if their limits are exceeded.

Having today's access to new materials, advanced manufacturing technologies and fast growing digital tools opens the way for product optimization in many directions, but one still has to consider the nature of random loads and variable amplitudes. Such loading creates complex stress-time-histories for the material which may initiate fatigue cracks and fractures. In different sectors such as automotive, railway, aircraft, maritime, plant & civil engineering, as well as renewable energy people deal with variable amplitude loading in test and analyses, but only a few standards for durability approval exist, and the methods used in design, analysis and testing vary considerably.

Within the research and engineering community there is a strong sensing that we are on the verge of expanding methods and capabilities by digitization significantly: New materials, manufacturing and joining technologies meet smart sensors, big data and machine learning. Operational data is available to almost no costs, so, what can new methods such as data mining and data analytics do to enhance the knowledge about fatigue life under variable amplitude loading? By using digital twins complete new operational concepts can be deployed which include condition-based maintenance and residual life assessment. Advanced test benches & automation with 'in-the-loop' setups provide the capability to speed up verification and validation even of complex systems.

Where do we go from here?
The major goal of this conference, organized by the German Association for Materials Research and Testing (DVM), is to look at advanced material mechanics and fatigue under variable amplitude loading as well as the utilization of these fundamentals to most modern applications.

Started in 2002, the 2020 conference will be the fourth 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.

Matthias Decker
AUDI AG, Ingolstadt, Germany

Rüdiger Heim
Fraunhofer LBF, Darmstadt Germany

Conference programme

The VAL4 conference schedule including session arrangements and abstracts of the contributions will be published on the conference website www.val4.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 your abstract to the conference website www.val4.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) Big data and data mining
(4) Data analytics and predictive analytics

(D) Digitization
(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) Neural nets and machine learning

(E) Advanced materials and manufacturing
(1) New steel & aluminum 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 Railway
IV Maritime
V Civil & plant engineering
VI others

Timeline

October 2018
Start of abstract submission. For details please refer to the conference website www.val4.de

28 February 2019
End of abstract submission

June 2019
Notification of authors about acceptance of their papers

15 September 2019
Start of Early Bird registration

15 December 2019
- End of Early Bird registration
- Deadline for submission of full papers and registration including payment (conditional for publication of paper)
- Tentative conference programme online

29 February 2020
Final conference programme available

30 March to 3 April 2020
VAL4 Conference in Darmstadt, Germany

Exhibition

An accompanying exhibition showcasing technology, products and services related to variable amplitude fatigue is planned. For details please have a look at www.val4.de.

Social Events

Events and possibilities for visiting companies and institutes will be announced soon at the conference website www.val4.de.

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 VAL4 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 scientific impact and quality.

Conference Venue

The conference will be held at the "Maschinenhaus" of the Technical University, which is a lovely building from 1904 and perfectly suited for an international conference just a walk away from the city center. For more information see www.val4.de.

Travelling Information

Darmstadt is 30 km south of Frankfurt and can be reached easily by plane via Frankfurt international airport as well by train or car. Details see www.val4.de.

Accommodation

Special arrangements for participants will be offered soon at www.val4.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.