

Editorial: Fifth issue 2024

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The editors-in-chief of the *International Journal of Structural Integrity (IJSI)* take advantage of this editorial to announce the 2024 International Symposium on Structural Integrity (ISSI 2024) that will be held in Dongguan, China, by the Centre of Excellence for Advanced Materials (CEAM), during November 5–8, 2024. The theme of ISSI 2024 is “Structural Integrity for Advanced Manufacturing”. The aim of this symposium is hence to bring together people from both academic and industrial communities to exchange ideas and network friendship by discussing emerging structural integrity issues related to advanced manufacturing, where papers towards are mostly welcome.

Besides, the editors-in-chief would also like to announce the 2025 International Conference on Structural Integrity (ICSI 2025) that will be held in Madeira, Portugal, by the Portuguese Structural Integrity Society (SPFIE) during September 01–04, 2025. ICSI 2025 focuses on all aspects and scales of structural integrity, from the basics to future trends, with special emphasis on multi-scale and multi-physics approaches and applications to new materials and challenging environments. Additionally, the editors-in-chief would also like to announce The International Conference on Renewable Energies and Ocean Technologies (REOTech 2025), which will take place in the City of Porto, located at seaside in the northwest region of Portugal, in 5–6th June 2025. This conference is intended to be a forum of discussion of new research concepts, equipment, technology, materials and structures and other scientific advances within the field of onshore, power and energy systems, power generation and transmission, estuarine, coastal, offshore and deep water engineering with particular reference to developments, exploration, installation, application and utilisation of onshore and offshore resources. This event also covers topics related with research, design and construction of wind engineering and renewable energy, computational mechanics and design optimisation, instrumentation and testing, structural integrity and life extension of structures, wind and wave dynamics, sedimentation, structural/stress analysis, soil mechanics, material research and economic, environmental and legal aspects. Such a challenging scenario provides a strong impetus for advancing the scientific and technological knowledge in the various fields related to power and energy systems, renewable energies, naval architecture and ocean engineering including also civil, mechanical, electrical, material, petroleum, coastal and oceanographic engineering, meteorology, applied mathematics and economic, environmental and legal aspects.

The editors-in-chief have made an effort to support special issues coming from world-renowned scientific events that contribute greatly to the journal’s scientific indicators.

Furthermore, the editors-in-chief announce that Professor Grzegorz Lesiuk from the Wroclaw University of Science and Technology (Poland), member of the *IJSI* editorial board, has been awarded the ESIS Fellow 2024. Ms. Rita Dantas, a 28-year-old researcher from the Faculty of Engineering of the University of Porto (FEUP), has been awarded the Young Scientist Prize 2024 by the European Structural Integrity Society (ESIS) for the excellence of her doctoral work. Rita Dantas is a Ph.D. student at the Faculty of Engineering of the University of Porto (FEUP), with a Ph.D. scholarship funded by the MIT Portugal Program and the Portuguese Foundation for Science and Technology (FCT) with a thesis titled “An integrated multiscale fatigue methodology applied to ocean structural systems” under the supervision of José A.F.O. Correia, Abílio De Jesus and Grzegorz Lesiuk, members of the editorial board of the *IJSI* journal.

2024 fifth issue

This 2024 fifth issue of the *IJSI* focuses on the following topics: bridge and tunnel engineering, defence applications, finite element (FE) modelling, extended finite element method (XFEM), experimental studies, stiffness damage analysis, thermo-mechanical performance, multiaxial



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low-cycle fatigue, lifetime prediction, structural health monitoring, non-destructive monitoring, damage detection, fibre metal laminate, self-compacted concrete (SCC), carbon-fibre-reinforced polymer riveted structures, cracked beam, risk analysis and reliability.

Niu *et al.* (2024) performed a comparative study on different forms of riveting simulation methods by improving the efficiency and reliability of simulation analysis applied to composite riveting structures. According to the authors, this study aims to serve as technical support for the riveting process and mechanical analysis between carbon fibre composite components in transportation products.

Honarjoo *et al.* (2024) introduced the SigBERT approach that fine-tunes BERT for the purpose of distinguishing between intact and damaged structures through the analysis of vibration signals. The approach proposed by these authors' aims to improve existing methods in terms of cost-effectiveness, accuracy and operational reliability.

Xiong *et al.* (2024) presented an improved particle swarm algorithm to optimise cable-stayed force in asymmetric one-tower cable-stayed bridge formation. For that, a mathematical quadratic programming model, considering as an objective function the sum of the bending energies of the main beam and the bridge tower was considered. This approach is useful as it eliminates the need for arbitrary manual cable adjustments seen in traditional methods and effectively addresses the optimisation challenge in asymmetric suspension bridges.

Sabamehr *et al.* (2024) suggested a new multi-setup fusion method and evaluated its performance using simulated response data from a FE model of a five-story structure and experimental data from a laboratory-tested cantilever beam, demonstrating that the developed algorithm can improve the system identification process and speed up data processing.

Wan *et al.* (2024) analysed the bearing capacity, including the stiffness damage analysis of the joints strengthening, of a pre-stressed concrete (PC) continuous girder bridge after five years of strengthening by means of FE software, where can be provided a reference for similar bridge strengthening.

Wu *et al.* (2024) focused on the use of the bootstrap method and the principle of fatigue life percentile consistency to realise sample aggregation and information fusion, where the sample data are checked through the classical outlier detection algorithm. In this analysis, the experimental data of the Q355(D) material were used. A new method of notch fatigue analysis based on the stress field intensity method, combining the Weibull distribution to construct a low-cycle fatigue life analysis framework, contributing to the development of multiaxial fatigue from experimental studies.

Salmalian *et al.* (2024) investigated the free vibration sensitivity analysis of cracked fibre-metal-laminated (FML) beams by means of numerical and experimental analyses. In this research, the authors considered the location and length of cracks as input factors for the frequency sensitivity analysis, where the effective interaction diagrams are presented for the crack detection.

Obaidat *et al.* (2024) explored an experimental investigation on the behaviour of strengthened and/or repaired heat-damaged one-way SCC slabs with openings utilising near-surface-mounted carbon-fibre-reinforced polymers (NSM-CFRP) strips, resulting in the need to reinforce the slab under flexure and increase the flexural strength of the SCC slab that have been heat-damaged.

Guo *et al.* (2024) studied the occurrence of segment cracks caused by load changes in shield tunnels would affect the safety of the tunnel structure based on the XFEM. With this research work, the authors aim to provide guidance for the management of cracks in shielding tunnels during operation.

Xiao *et al.* (2024) suggested a new method of dynamic risk analysis of the cable system of the suspended multi-tower cable-stayed bridge based on the Bayesian network. According to the authors, the method aims to achieve comprehensive and accurate risk management and control in the construction process of the cable system to improve the service life of the cable and at the same time enhance the overall reliability of the structure.

The editors-in-chief and members of the editorial board of the *IJSI* are very grateful to the editors, authors and reviewers who contributed to the fifth issue. A special thanks to the Emerald staff for all the effort and work spent in preparing this issue.

José A.F.O. Correia and Shun-Peng Zhu

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