

Special Issue

Symmetry in Fault Detection, Diagnosis, and Prognostics

Message from the Guest Editors

- The study of symmetry plays a crucial role in fault detection, diagnosis, and prognostics across various engineering systems. Many mechanical, electrical, and industrial system failures arise from disruptions in expected symmetrical patterns, which can be effectively analyzed using advanced artificial intelligence, machine learning, and signal processing techniques. This Special Issue aims to explore novel methodologies and applications that leverage the principles of symmetry to enhance fault detection accuracy, optimize diagnostic strategies, and improve predictive maintenance frameworks. Contributions related to theoretical advancements, experimental validations, and real-world case studies are welcome. Topics of interest include, but are not limited to, AI-driven fault detection, vibration and acoustic analysis, sensor fusion for diagnostics, and physics-informed machine learning for prognostics.
- We invite researchers and practitioners to contribute their latest findings to this Special Issue; we hope to foster innovation in maintenance engineering, reliability analysis, and intelligent fault management.

Guest Editors

Prof. Dr. Arthur Henrique de Andrade Melani

Department of Mechatronics and Mechanical Systems Engineering,
University of Sao Paulo, Sao Paulo 05508-030, Brazil

Prof. Dr. Renan Favarão da Silva

Department of Production Engineering, University of Sao Paulo, Sao
Paulo 05508-030, Brazil

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Symmetry
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
symmetry@mdpi.com

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About the Journal

Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

Editor-in-Chief

Prof. Dr. Sergei Odintsov
ICREA, 08010 Barcelona and Institute of Space Sciences (IEEC-CSIC),
C. Can Magrans s/n, 08193 Barcelona, Spain

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