# Asymmetric Studies with Complex Mechanical Systems

Guest Editors:

**Dr. Zhuyun Chen**

**Dr. Borong Hu**

**Dr. Yun Kong**

**Dr. Minghui Hu**

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## Message from the Guest Editors

Asymmetry analysis is a crucial aspect of mechanical engineering that helps in identifying and diagnosing faults in machines. By studying the asymmetrical characteristics of a mechanical system, engineers can pinpoint the root cause of issues such as unbalance, misalignment, and faults of motors, bearings, etc. With the advent of modern technology, the complexity of mechanical systems has increased, making it more challenging to detect and predict faults accurately.

Machine learning has emerged as a powerful tool for asymmetric analysis in mechanical fault detection and diagnosis. By leveraging the power of artificial intelligence, engineers can train machines to identify patterns and anomalies in data, making it easier to detect faults in real time. The integration of machine learning with cloud computing and Industry 4.0 technologies has opened up new possibilities for improving the accuracy and efficiency of fault diagnosis in complex systems.

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## Editor-in-Chief

**Prof. Dr. Sergei Odintsov**
1. Institució Catalana de Recerca i Estudis Avançats (ICREA), Passeig Luis Companys, 23, 08010 Barcelona, Spain
2. Institute of Space Sciences (ICE-CSIC), C. Can Magrans s/n, 08193 Barcelona, Spain

## 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.

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